CLAIMS

1. An information transmission method, applied to a network device, comprising:

transmitting downlink control information DCI to a terminal device based on a current random access type, wherein

the DCI is used to schedule a random access response message corresponding to the current random access type;

wherein the DCI is scrambled by a random access radio network temporary identity RA-RNTI, and the RA-RNTI is associated with the current random access type; and

wherein the RA-RNTI is calculated using the following formula:

RA-RNTI =

$1+n1\times s_id+n2\times 14\times t_id+n3\times 14\times A\times f_id+n4\times 14\times A\times B\times ul_carrier_id+n5\times E_id$, wherein

s_id is an orthogonal frequency division multiplexing OFDM symbol index of the first symbol of a physical random access channel PRACH time domain resource, t_id is a slot index of the first slot of the PRACH time domain resource, and f_id is a frequency-domain index of a PRACH occasion RO on the PRACH time domain resource;

A is any one of the following numerical values: a natural number configured by the network device, a preset value, a numerical value indicated by the terminal device, and the number of slots in a preset time window;

B is any one of the following numerical values: a natural number configured by the network device, a preset value, a numerical value indicated by the terminal device, and the number of ROs for frequency-division multiplexing FDM on the PRACH time domain resource;

ul_carrier_id is any one of the following numerical values: a natural number configured by the network device, a preset value, and a numerical value indicated by the terminal device;

n1, n2, n3, n4, and n5 are preset coefficients; and

E_id is a variable associated with random access type.

2. The method according to claim 1, wherein the DCI comprises indication information, and the indication information is used to indicate a random access type corresponding to the random access response message scheduled by the DCI.

3. The method according to claim 1, wherein before the transmitting downlink control information DCI to a terminal device based on a current random access type, the method further comprises:

transmitting physical downlink control channel PDCCH configuration information to the terminal device, wherein

the PDCCH configuration information comprises at least two types of search space configuration information, and each type of search space configuration information is configured for DCI that schedules response messages corresponding to one random access type.

4. The method according to claim 3, wherein the transmitting downlink control information DCI to a terminal device based on a current random access type comprises:

transmitting the DCI to the terminal device in a target search space, wherein

the target search space corresponds to the current random access type.

5. An information detection method, applied to a terminal device, comprising:

performing detection for target DCI based on a current random access type, wherein

the target DCI is used to schedule a random access response message corresponding to the current random access type;

wherein the performing detection for target DCI based on a current random access type comprises:

performing, based on the current random access type, detection for the target DCI scrambled by an RA-RNTI, wherein

the RA-RNTI is associated with the current random access type; and

wherein the RA-RNTI is calculated using the following formula:

RA-RNTI =

$1+n1\times s_id+n2\times 14\times t_id+n3\times 14\times A\times f_id+n4\times 14\times A\times B\times ul_carrier_id+n5\times E_id$,

wherein

s_id is an OFDM symbol index of the first symbol of a PRACH time domain resource, t_id is a slot index of the first slot of the PRACH time domain resource, and f_id is a frequency-domain index of an RO on the PRACH time domain resource;

A is any one of the following numerical values: a natural number configured by the network device, a preset value, a numerical value indicated by the terminal device, and the number of slots in a preset time window;

B is any one of the following numerical values: a natural number configured by the network device, a preset value, a numerical value indicated by the terminal device, and the number of ROs for FDM on the PRACH time domain resource;

ul_carrier_id is any one of the following numerical values: a natural number configured by the network device, a preset value, and a numerical value indicated by the terminal device;

n1, n2, n3, n4, and n5 are preset coefficients; and

E_id is a variable associated with random access type.

6. The method according to claim 5, wherein the performing detection for target DCI based on a current random access type comprises:

performing blind detection for DCI;

judging, based on indication information comprised in blindly detected DCI, whether a random access response message scheduled by the blindly detected DCI corresponds to the current random access type; and

in a case that the random access response message scheduled by the blindly detected DCI corresponds to the current random access type, determining that the blindly detected DCI is the target DCI; wherein

the indication information is used to indicate a random access type corresponding to the random access response message scheduled by the blindly detected DCI.

7. The method according to claim 6, further comprising:

in a case that the random access response message scheduled by the blindly detected DCI does not correspond to the current random access type, determining that the blindly detected DCI is not the target DCI; and

processing, in a preset manner, a data block scheduled by the blindly detected DCI, wherein

the preset manner comprises any one of the following:

skipping receiving any data block scheduled by the blindly detected DCI; and

discarding any data block received that is scheduled by the blindly detected DCI.

8. The method according to claim 5, wherein before the performing detection for target DCI based on a current random access type, the method further comprises:

receiving PDCCH configuration information from a network device, wherein

the PDCCH configuration information comprises at least two types of search space configuration information, and each type of search space configuration information is configured for DCI that schedules response messages corresponding to one random access type.

9. The method according to claim 8, wherein the performing detection for target DCI based on a current random access type comprises:

performing detection for the target DCI in a target search space based on the current random access type and the PDCCH configuration information, wherein

the target search space corresponds to the current random access type.

10. A network device, comprising:

a first transmission module, configured to transmit DCI to a terminal device based on a current random access type, wherein

the DCI is used to schedule a random access response message corresponding to the current random access type;

wherein the DCI is scrambled by an RA-RNTI, and the RA-RNTI is associated with the current random access type; and

wherein the RA-RNTI is calculated using the following formula:

RA-RNTI =

$1+n1\times s_id+n2\times 14\times t_id+n3\times 14\times A\times f_id+n4\times 14\times A\times B\times ul_carrier_id+n5\times E_id$, wherein

s_id is an OFDM symbol index of the first symbol of a PRACH time domain resource, t_id is a slot index of the first slot of the PRACH time domain resource, and f_id is a frequency-domain index of an RO on the PRACH time domain resource;

A is any one of the following numerical values: a natural number configured by the network device, a preset value, a numerical value indicated by the terminal device, and the number of slots in a preset time window;

B is any one of the following numerical values: a natural number configured by the network device, a preset value, a numerical value indicated by the terminal device, and the number of ROs for FDM on the PRACH time domain resource;

ul_carrier_id is any one of the following numerical values: a natural number configured by the network device, a preset value, and a numerical value indicated by the terminal device;

n1, n2, n3, n4, and n5 are preset coefficients; and

E_id is a variable associated with random access type.

11. A terminal device, comprising:

a detection module, configured to perform detection for target DCI based on a current random access type, wherein

the target DCI is used to schedule a random access response message corresponding to the current random access type;

wherein the detection module is specifically configured to:

perform, based on the current random access type, detection for the target DCI scrambled by an RA-RNTI, wherein

the RA-RNTI is associated with the current random access type; and

wherein the RA-RNTI is calculated using the following formula:

RA-RNTI =

$1+n1\times s_id+n2\times 14\times t_id+n3\times 14\times A\times f_id+n4\times 14\times A\times B\times ul_carrier_id+n5\times E_id$, wherein

s_id is an OFDM symbol index of the first symbol of a PRACH time domain resource, t_id is a slot index of the first slot of the PRACH time domain resource, and f_id is a frequency-domain index of an RO on the PRACH time domain resource;

A is any one of the following numerical values: a natural number configured by the network device, a preset value, a numerical value indicated by the terminal device, and the number of slots in a preset time window;

B is any one of the following numerical values: a natural number configured by the network device, a preset value, a numerical value indicated by the terminal device, and the number of ROs for FDM on the PRACH time domain resource;

ul_carrier_id is any one of the following numerical values: a natural number configured by the network device, a preset value, and a numerical value indicated by the terminal device;

n1, n2, n3, n4, and n5 are preset coefficients; and

E_id is a variable associated with random access type.

12. A computer-readable storage medium, wherein the computer-readable storage medium stores a computer program, and when the computer program is executed by a processor, the steps of the information transmission method according to any one of claims 1 to 4 or the steps of the information detection method according to any one of claims 6 to 9 are implemented.