CLAIMS

[Claim 1] A primary communication device having a communication initiative through a bus, the primary communication device comprising:
communication circuitry configured to communicate with a plurality of secondary communication devices, wherein the plurality of secondary communication devices are configured to perform communication under control of the primary communication device; and
control circuitry configured to:
cause the primary communication device to assign a respective dynamic address to each of the plurality of secondary communication devices,
cause the primary communication device to acquire a respective capability information from at least one of the plurality of secondary communication devices to determine whether one of the plurality of second communication devices has a capability to have the communication initiative through the bus and has a capability to perform a group address assignment, and
cause the primary communication device to assign a respective group address to at least one of the plurality of secondary communication devices and to store the respective group address in the at least one of the plurality of second communication devices that is determined to have the capability to have the communication initiative through the bus and has a capability to perform a group address assignment.

[Claim 2] The primary communication device according to claim 1, wherein, in a case where the control circuitry determines that the one of the plurality of second communication devices has the capability to have the communication initiative through the bus and has the capability to perform the group address assignment, the control circuitry is configured to cause the primary communication device to inform the one of the plurality of second communication devices of the assigned group addresses.

[Claim 3] The primary communication device according to claim 2, wherein
the control circuitry is configured to cause the primary communication device to inform the one of the plurality of second communication devices of the assigned group addresses by transmitting a first command, and
the first command includes a first command code, a count, an information regarding the primary communication device, and an information regarding at least one of the plurality of second communication devices.

[Claim 4] The primary communication device according to claim 1, wherein the control circuitry is configured:
to determine whether one of the plurality of second communication devices has a capability to have the communication initiative through the bus, and
in a case where the control circuitry determines that the one of the plurality of second communication devices has the capability to have the communication initiative through the bus, to cause the primary communication device to inform the one of the plurality of second communication devices of a respective device information for each of the plurality of second communication devices.

[Claim 5] The primary communication device according to claim 4, wherein the respective device information includes one or more selected from the group consisting of: a device ID, a function information, a static address, and/or the assigned dynamic address.

[Claim 6] The primary communication device according to claim 1, wherein
the control circuitry is configured to cause the primary communication device to store the respective group address by transmitting a second command to the at least one of the plurality of secondary communication devices that is determined to have the capability to have the communication initiative through the bus and has a capability to perform a group address assignment, and
the second command includes a second command code, the assigned dynamic address, and the respective group address.

[Claim 7] The primary communication device according to claim 1, wherein
the control circuitry is configured to cause the primary communication device to issue a read command, and
the group address is prohibited to be designated in the read command.

[Claim 8] The primary communication device according to claim 1, wherein the respective capability information includes information corresponding to an I3C version state of the corresponding second communication device.

[Claim 9] The primary communication device according to claim 1, wherein the respective capability information includes information representing a number of assignable group address slots of the corresponding second communication device.

[Claim 10] The primary communication device according to claim 1, wherein the communication circuitry and/or the control circuitry are respectively configured from a semiconductor integrated circuit.

[Claim 11] The primary communication device according to claim 1, wherein the control circuitry is configured to cause the primary communication device to issue a write command to those among the plurality of secondary communication devices having a particular group address.

[Claim 12] The primary communication device according to claim 11, wherein the primary communication device is configured to receive an acknowledgment from those among the plurality of secondary communication devices having the particular group address, in response to the write command.

[Claim 13] The primary communication device according to claim 1, further comprising a register configured to store the respective capability information acquired from the at least one of the plurality of second communication devices.

[Claim 14] A communication method performed by a primary communication device having a communication initiative through a bus, the method comprising:

communicating with a plurality of secondary communication devices, wherein the plurality of secondary communication devices are configured to perform communication under control of the primary communication device;

causing the primary communication device to assign a respective dynamic address to each of the plurality of secondary communication devices;

causing the primary communication device to acquire a respective capability information from at least one of the plurality of secondary communication devices to determine whether one of the plurality of second communication devices has a capability to have the communication initiative through the bus and has a capability to perform a group address assignment; and

causing the primary communication device to assign a respective group address to at least one of the plurality of secondary communication devices and to store the respective group address in the at least one of the plurality of second communication devices that is determined to have the capability to have the communication initiative through the bus and has a capability to perform a group address assignment.

[Claim 15] A communication system comprising:

a primary communication device having a communication initiative through a bus; and

a plurality of secondary communication devices configured to perform communication under control of the primary communication device, wherein

the primary communication device includes:

communication circuitry configured to communicate with the plurality of secondary communication devices, and

control circuitry configured to:

cause the primary communication device to assign a respective dynamic address to each of the plurality of secondary communication devices,

cause the primary communication device to acquire a respective capability information from at least one of the plurality of secondary communication devices to determine whether one of the plurality of second communication devices has a capability to have the communication initiative through the bus and has a capability to perform a group address assignment, and

cause the primary communication device to assign a respective group address to at least one of the plurality of secondary communication devices and to store the respective group address in the at least one of the plurality of second communication devices that is determined to have the capability to have the communication initiative through the bus and has a capability to perform a group address assignment.