

CLAIMS

[Claim 1]

A communication device comprising:

transmission and reception circuitry configured to communicate with an external communication device via a data signal line and a clock signal line, the communication including transmitting and receiving data via the data signal line and transmitting a clock via the clock signal line; and

control circuitry configured to:

monitor a communication condition of at least one of the data signal line and the clock signal line, and

cause the clock signal line to stay at a first predetermined level for a predetermined period of time, in response to a determination relating to the communication condition, and drive the clock signal line to a second predetermined level after the predetermined period of time has elapsed to cause the external communication device to release a drive state of the data signal line.

[Claim 2]

The communication device according to claim 1, wherein the first predetermined level is an L clock level.

[Claim 3]

The communication device according to claim 2, wherein the second predetermined level is an H clock level.

[Claim 4]

The communication device according to claim 3, wherein the communication device receives transmission rights from the external communication device before the clock signal line is driven to the H clock level.

[Claim 5]

The communication device according to claim 3, wherein the control circuitry is configured to cause the transmission and reception circuitry to transmit a stop signal by driving the data signal line to an H data level after the clock signal line is driven to the H clock level.

[Claim 6]

The communication device according to claim 1, wherein the communication device is a master and the external communication device is one of a plurality of slaves.

[Claim 7]

A communication device, comprising:

transmission and reception circuitry configured to communicate with an external communication device via a data signal line and a clock signal line, the communication including transmitting and receiving data via the data signal line and receiving a clock via the clock signal line; and

control circuitry configured to:

determine an error condition of the data signal line or the clock signal line,

count a first period of time during which the data signal line is at a first predetermined level, or a second period of time during which the clock signal line is at a second predetermined level, and

release a drive state of the data signal line when the second period of time exceeds a predetermined value and when the clock signal line is driven to a third predetermined level from the second predetermined level after the second period of time exceeds the predetermined value.

[Claim 8]

The communication device according to claim 7, wherein the determination of the error condition is a detection of an error in one bit of the data.

[Claim 9]

The communication device according to claim 7, wherein the first predetermined level is an H data level or an L data level, and the second predetermined level is an H clock level or an L clock level.

[Claim 10]

The communication device according to claim 7, wherein:

the second predetermined level is an L clock level, the control circuitry is configured to transfer transmission rights to the external communication device when the second period of time exceeds the predetermined value, and

the third predetermined level is an H clock level.

[Claim 11]

The communication device according to claim 10, wherein the control circuitry is configured to receive a stop signal by detecting the data signal line being driven to an H data level after detecting the clock

signal line being driven to the H clock level.

[Claim 12]

The communication device according to claim 7,
wherein the communication device is one of a plurality of
slaves and the external communication device is a master.

[Claim 13]

A communication system comprising:

a first communication device, including:

first transmission and reception circuitry
configured to communicate via a data signal line and a
clock signal line, the communication including
transmitting and receiving data via the data signal line
and a transmitting a clock via the clock signal line, and

first control circuitry configured to:

monitor a first communication condition
of at least one of the data signal line and the clock
signal line, and

cause the clock signal line to stay at
a first predetermined level for a predetermined period of
time, in response to a determination relating to the
first communication condition; and

a second communication device including second
transmission and reception circuitry configured to
communicate with the first communication device via the
data signal line and the clock signal line, the
communication including transmitting and receiving data
via the data signal line and receiving the clock via the
clock signal line,

wherein the first control circuitry is further configured
to drive the clock signal line to a second predetermined
level after the predetermined period of time has elapsed

to cause the second communication device to release a drive state of the data signal line.

[Claim 14]

The communication system according to claim 13, the second communication device including second control circuitry configured to:

determine an error condition of the data signal line or the clock signal line,

count a first period of time during which the data signal line is at a third predetermined level, or a second period of time during which the clock signal line is at a fourth predetermined level, and

release a drive state of the data signal line when the second period of time exceeds a predetermined value and when the clock signal line is driven to a fifth predetermined level from the fourth predetermined level after the second period of time exceeds the predetermined value.

[Claim 15]

The communication system according to claim 14, wherein the determination of the error condition is a detection of an error in one bit of the data.

[Claim 16]

The communication system according to claim 14, wherein the first predetermined level and the fourth predetermined level are an L clock level, and the second and fifth predetermined levels are an H clock level.

[Claim 17]

A communication method in a communication device, the method comprising:

communicating with from an external communication device via a data signal line and a clock signal line, including transmitting and receiving data via the data signal line and transmitting a clock via the clock signal line;

monitoring a communication condition of at least one of the data signal line and the clock signal line;

causing the clock signal line to stay at a first predetermined level for a predetermined period of time, in response to a determination relating to the communication condition; and

driving the clock signal line to a second predetermined level after the predetermined period of time has elapsed to cause the external communication device to release a drive state of the data signal line.