WHAT IS CLAIMED IS:

1. A communication device comprising a communication unit configured to communicate with a LAN, at least one IO port that is connectable to a manufacturing apparatus, and a control unit,

the IO port being configured to exchange ON/OFF signal including a plurality of bits with the manufacturing apparatus, and

the control unit being configured and programmed to

receive communication requests from communication destinations via the LAN, and store network addresses of the communication destinations and data specifying the IO port designated by the communication destinations,

change values of ON/OFF signal of the designated IO port in accordance with requests from the communication destinations, and

transmit the ON/OFF signal of the designated IO port to the communication destinations via the communication unit and the LAN in accordance with requests from the communication destinations.

2. The communication device according to claim 1, further comprising:

a storage unit for storing presence or absence of exclusive control on IO port,

the control unit comprising a determination unit configured to determine whether or not exclusive control on the designated IO port is necessary based on communication requests from the communication destinations, and

the communication device being configured and programmed such that, in a case where communication requests from the communication destinations are received and the determination unit determines that exclusive control on the designated IO port is necessary,

if statuses of the designated IO port correspond to absence of

exclusive control, the ON/OFF signal of the designated IO port is changed in accordance with requests from the communication destinations, and storage of the storage unit is changed such that exclusive control on the designated IO port is present, and

if statuses of the designated IO port correspond to presence of exclusive control, changing of the ON/OFF signal of the designated IO port is denied, and

in a case where communication requests from the communication destinations are received and the determination unit determines that exclusive control on the designated IO port is not necessary, the ON/OFF signal of the designated IO port is transmitted to the communication destinations via the communication unit and the LAN in accordance with the requests from the communication destinations regardless of presence or absence of exclusive control on the designated IO port.

3. The communication device according to claim 1 or 2,

transfer vehicles configured to transfer articles to and from stations of a manufacturing apparatus, and a controller configured to control a plurality of transfer vehicles being included as the communication destinations, and

the communication device being configured and programmed to transmit the ON/OFF signal of the designated IO port to the controller via the communication unit.

4. The communication device according to any of claims 1 to 3,

the communication device having a network address, and data specifying the IO port.

5. The communication device according to claim 3 or 4,

the communication device being configured and programmed such that the

controller and a transfer vehicle may access the ON/OFF signal of the designated IO port.

6. The communication device according to any of claims 3 to 5,

wherein a peripheral device other than the manufacturing apparatus is connected to the IO port, and being configured and programmed such that status data regarding the peripheral device may be accessed by the controller and a transfer vehicle.

7. A communication apparatus comprising:

the communication device according to any of claims 1 to 6,

wherein transfer vehicles configured to transfer articles to and from stations of a manufacturing apparatus, and a controller that controls a plurality of transfer vehicles are included as the communication destinations, and

wherein the manufacturing apparatus comprises a communication terminal configured such that the communication terminal may communicate with the transfer vehicles and is connected to a main body of the manufacturing apparatus by a communication line; and

an adapter configured to be inserted into the communication line and be connected to the IO port,

wherein the communication apparatus is configured and programmed such that the adapter may switch between

an adapter pass mode of relaying communication between the communication terminal and the main body and transmitting communication data to the IO port, and

an adapter control mode of relaying communication between the manufacturing apparatus and the IO port if the communication terminal and the main body are not communicating.

8. The communication apparatus according to claim 7,

wherein the communication apparatus is configured and programmed such that the IO port may switch between a state of being connected to the adapter and a state of directly communicating with a terminal of the manufacturing apparatus.

9. The communication apparatus according to claim 7 or 8,

wherein the adapter comprises a switch inserted into the communication line, and a second communication line branched from the communication line and connected to the IO port, and

wherein the IO port is configured and programmed to watch communication with the main body in the adapter control mode and in the adapter pass mode.

10. The communication apparatus according to any of claims 7 to 9,

wherein the communication apparatus is configured and programmed to, if an abnormality of the communication unit is detected, change the IO port set to the adapter control mode to the adapter pass mode.

11. The communication apparatus according to any of claims 7 to 10,

wherein the communication apparatus is configured and programmed to receive instructions from transfer vehicles with the communication unit, and change the IO port set to the adapter control mode to the adapter pass mode.

12. A communication system comprising:

transfer vehicles configured to transfer articles to and from stations of a manufacturing apparatus; a controller configured to control transfer vehicles, and a manufacturing apparatus-side communication device,

the communication device comprising a communication unit configured to communicate with a LAN, at least one IO port, and a control unit,

the IO port is configured such that the IO port may be connected to the manufacturing apparatus and exchanges ON/OFF signal including a plurality of bits with the manufacturing apparatus, and

the control unit being configured and programmed to

receive communication requests from communication destinations via the LAN, including the transfer vehicles and the controller, and store network addresses of transmission origins of requests from the communication destinations, and data specifying IO port designated by the communication destinations,

change values of ON/OFF signal of designated IO port in accordance with requests from the communication destinations, and

transmit ON/OFF signal of designated IO port to the communication destinations via the communication unit and the LAN in accordance with requests from the communication destinations.

13. The communication system according to claim 12,

the controller controlling the transfer vehicles being configured and programmed to change transfer instructions or stop transfer based on ON/OFF signal of the designated IO port.

WHAT IS CLAIMED IS:

1. A communication device comprising a communication unit configured to communicate with a LAN, at least one IO port that is connectable to a manufacturing apparatus, and a control unit,

the IO port being configured to exchange ON/OFF signal including a plurality of bits with the manufacturing apparatus and to allow the control unit to overwrite values of the ON/OFF signal and to retrieve the signal, and

the control unit being configured and programmed to

receive communication requests from communication destinations via the LAN, and store network addresses of the communication destinations and data specifying the IO port designated by the communication destinations,

change values of ON/OFF signal of the designated IO port in accordance with requests from the communication destinations, and

transmit the ON/OFF signal of the designated IO port to the communication destinations via the communication unit and the LAN in accordance with requests from the communication destinations.

2. The communication device according to claim 1, further comprising:

a storage unit for storing presence or absence of exclusive control on IO port,

the control unit comprising a determination unit configured to determine whether or not exclusive control on the designated IO port is necessary based on communication requests from the communication destinations, and

the communication device being configured and programmed such that, in a case where communication requests from the communication destinations are received by the control unit and the determination unit determines that exclusive control on the designated IO port is necessary, if statuses of the designated IO port correspond to

absence of exclusive control, the ON/OFF signal of the designated IO port is changed by the control unit in accordance with requests from the communication destinations, and storage of the storage unit is changed such that exclusive control on the designated IO port is present, and if statuses of the designated IO port correspond to presence of exclusive control, changing of the ON/OFF signal of the designated IO port is denied by the control unit, and

in a case where communication requests from the communication destinations are received by the control unit and the determination unit determines that exclusive control on the designated IO port is not necessary, the ON/OFF signal of the designated IO port is transmitted by the control unit to the communication destinations via the communication unit and the LAN in accordance with the requests from the communication destinations regardless of presence or absence of exclusive control on the designated IO port.

3. The communication device according to claim 1 or 2,

the communication desitinations including transfer vehicles configured to transfer articles to and from stations of a manufacturing apparatus and a controller configured to control a plurality of transfer vehicles and

the control unit being configured and programmed to transmit the ON/OFF signal of the designated IO port to the controller via the communication unit.

4. The communication device according to any of claims 1 to 3,

the communication device having a network address, and data specifying the IO port.

5. The communication device according to any of claims 3 or 4,

wherein a peripheral device other than the manufacturing apparatus is connected

to the IO port connectable to the manufacturing apparatus or another IO port of the communication device, and being configured and programmed such that status data regarding the peripheral device may be accessed by the controller and a transfer vehicle.

6. A communication apparatus comprising:

the communication device according to any of claims 1 to 5,

wherein transfer vehicles configured to transfer articles to and from stations of a manufacturing apparatus, and a controller that controls a plurality of transfer vehicles are included as the communication destinations, and

wherein the manufacturing apparatus comprises a communication terminal configured such that the communication terminal may communicate with the transfer vehicles and is connected to a main body of the manufacturing apparatus by a communication line; and

an adapter configured to be inserted into the communication line and be connected to the IO port,

wherein the communication apparatus is configured and programmed such that the adapter may switch between

an adapter pass mode of relaying communication between the communication terminal and the main body and transmitting communication data to the IO port, and

an adapter control mode of relaying communication between the manufacturing apparatus and the IO port if the communication terminal and the main body are not communicating.

7. The communication apparatus according to claim 6,

wherein the communication apparatus is configured and programmed such that the IO port may switch between a state of being connected to the adapter and a state of

directly communicating with a terminal of the manufacturing apparatus.

8. The communication apparatus according to claim 6 or 7,

wherein the adapter comprises a switch inserted into the communication line, and a second communication line branched from the communication line and connected to the IO port, and

wherein the IO port is configured and programmed to watch communication with the main body in the adapter control mode and in the adapter pass mode.

9. The communication apparatus according to any of claims 6 to 8,

wherein the communication apparatus is configured and programmed to, if an abnormality of the communication unit is detected, change the IO port set to the adapter control mode to the adapter pass mode.

10. The communication apparatus according to any of claims 6 to 9,

wherein the communication apparatus is configured and programmed to receive instructions from transfer vehicles with the communication unit, and change the IO port set to the adapter control mode to the adapter pass mode.

11. A communication system comprising:

transfer vehicles configured to transfer articles to and from stations of a manufacturing apparatus; a controller configured to control transfer vehicles, and a manufacturing apparatus-side communication device,

the communication device comprising a communication unit configured to communicate with a LAN, at least one IO port, and a control unit,

the IO port is configured such that the IO port may be connected to the manufacturing apparatus, exchanges ON/OFF signal including a plurality of bits with

the manufacturing apparatus, and allows the control unit to overwrite values of the ON/OFF signal and to retrieve the signal, and

the control unit being configured and programmed to

receive communication requests from communication destinations via the LAN, including the transfer vehicles and the controller, and store network addresses of transmission origins of requests from the communication destinations, and data specifying IO port designated by the communication destinations,

change values of ON/OFF signal of designated IO port in accordance with requests from the communication destinations, and

transmit ON/OFF signal of designated IO port to the communication destinations via the communication unit and the LAN in accordance with requests from the communication destinations.

12. The communication system according to claim 11,

the controller controlling the transfer vehicles being configured and programmed to change transfer instructions or stop transfer based on ON/OFF signal of the designated IO port.