CLAIMS

1. A flow dividing system for dividing a single flow rate into a plurality of flow rates, and controlling respective flow rates so that a ratio between the divided flow rates becomes a preset flow ratio, the flow dividing system comprising:

a branching mechanism for dividing the single flow rate into the plurality of flow rates; and

a plurality of fluid control devices that are formed as separate bodies from the branching mechanism, respectively control the plurality of flow rates, and are separated from and independent of each other;

the plurality of fluid control devices comprising one master device, with the remainder being a slave device;

the master device comprising a communication unit for transmitting a preset flow rate value on the basis of the preset flow ratio to the slave device and receiving a flow rate detection value from the slave device; and

the slave device comprising a communication unit for receiving the preset flow rate value from the master device and transmitting the flow rate detection value to the master device,

wherein: each of the master and slave devices comprises a base portion that defines an inflow port, a flow path, and an outflow port of a single flow rate of the plurality of divided flow rates; the base portion is formed into a block shape; and the inflow port and the outflow port of the base portion are formed on a bottom surface serving as an installation surface,

wherein the branching mechanism comprises a first block-shaped joint member that divides a single flow rate into a plurality of flow rates, the first block-shaped joint member comprising a top surface with a plurality of openings arranged therein and, in an interior thereof, a plurality of branching flow paths that respectively communicate with the plurality of openings, and a flow path with the plurality of branching flow paths commonly connected thereto; each of the plurality of openings being connectable with a respective one of the inflow ports of the master and slave devices and an outflow port of an upstream device, and

wherein the base portions of the master device and the slave device are each fixed to the first block-shaped joint member by fastening members, and each of the flow paths communicating with the inflow ports on the bottom surfaces of the master device and the slave device is connected to the flow path communicating with the openings on the top surface of the first block-shaped joint member.

2. The flow dividing system according to claim 1, wherein

the master device comprises a flow rate calculating unit that calculates respective preset flow rate values of the plurality of fluid control devices on the basis of the preset flow ratio provided from an external source.

3. The flow dividing system according to claim 1 or 2, wherein

the flow rate calculating unit changes the preset flow rate values provided to the slave device on the basis of the preset flow ratio, the flow rate detection value of the master device, and the flow

rate detection value of the slave device acquired via the communication unit.

4. The flow dividing system according to claim 1, further comprising:

a plurality of second block-shaped joint members each comprising a top surface for mounting the bottom surface of the base portion of the master device or the slave device, the base portion being fixed thereto by fastening members; and

the second block-shaped joint members each comprising a flow path that opens at the top surface and is connected to an outflow port on the bottom surface of the master device or the slave device.

5. A fluid control system that includes the flow dividing system of any one of claims 1 to 4 and integrates a plurality of types of fluid control devices including the master and save devices of the flow dividing system.

6. The fluid control system according to claim 5, wherein

the plurality of types of fluid control devices each comprise a base portion having a block shape and comprising an opening of a flow path formed on a bottom surface serving as an installation surface.

7. The fluid control system according to claim 5 or 6, wherein:

the plurality of types of fluid control devices comprise a fluid control device that measures a flow rate of a fluid and controls the flow rate; and

the fluid control device comprises a base portion having the same specifications as those of the base portions of the master device and the slave device of the flow dividing system of any one of claims 1 to 4.

8. A method for manufacturing a fluid control system that includes the flow dividing system of any one of claims 1 to 4 and integrates a plurality of types of fluid control devices including the master and save devices of the flow dividing system, the method comprising the steps of:

positioning a plurality of block-shaped joint members including the first block-shaped joint member on a common base plate;

fixing each of the block-shaped joint members to the common base plate by fastening members;

positioning a seal member around an opening formed on a top surface of each of the joint members;

positioning respective bottom surfaces of the plurality of types of fluid control devices on the respective top surfaces of the block-shaped joint members; and

fixing respective base portions of the plurality of types of fluid control devices to the respective block-shaped joint members by fastening members.

9. A semiconductor manufacturing method that uses the flow dividing system of any one of claims 1 to 4 for controlling flow ratios of a fluid used in a semiconductor manufacturing process.

10. A method for manufacturing a flat panel display that uses the flow dividing system of any one of claims 1 to 4 for controlling flow ratios of a fluid used in a flat panel display manufacturing process.

11. A method for manufacturing a solar panel that uses the flow dividing system of any one of claims 1 to 4 for controlling flow ratios of a fluid used in a solar panel manufacturing process.