Claims

[Claim 1]

A numerical value management system using a pair of logical data structures constituted of:

a database constructed in a database server in which numerical data constituted of a plurality of numerical strings associated with a timestamp is recorded; and

a data identification ID recorded in an ID management server physically or logically separated from the database, the data identification ID uniquely identifying an attribute of numerical values constituting the numerical data, middleware, and an application for requesting the numerical data with respect to the database via the middleware, wherein

the data identification ID includes:

a unit ID constituted of a character string of at least two bytes defining a unit of the numerical data; and

an item ID of at least four bytes and made up of an item number, the item number being constituted of an integer value of at least two bytes for uniquely identifying a type ID of at least two bytes for defining a type of the numerical data and for uniquely identifying the type ID, and the type ID,

the unit ID being associated with a name and a unit character string,

the type ID including at least a character string corresponding to each type ID and the unit ID,

the data structures are constructed by transmitting the data identification ID to the ID management server via the middleware and transmitting the timestamp and the numerical data corresponding to the timestamp to the database server,

the numerical data includes measured value data acquired by a measuring instrument and calculated value data calculated based on the measured value data,

the data identification ID is attached to both the measured value data and the calculated value data constituting the numerical data, and

the application acquires the measured value data and/or the calculated value data included in the numerical data from the database via the middleware by attaching the data identification ID to the middleware and requesting the numerical data.

[Claim 2]

The numerical value management system according to claim 1, wherein the middleware is executed in a measurement terminal for acquiring the numerical data.

[Claim 3]

The numerical value management system according to claim 2, wherein the middleware is executed in a middleware server being physically or logically independent of the measurement terminal.

[Claim 4]

The numerical value management system according to claim 1, wherein the middleware is executed in a web server and necessary information is sent back from the web server being an object by using a Web API to receive a read request to which additional information including a data identification ID has been attached with respect to a URL of the web server.

[Claim 5]

The numerical value management system according to any one of claims 1 to 4, applied to a power generation system including a power conditioner and a device connected to the power conditioner, wherein

by using the data identification ID,

a physical meaning of the numerical data is identified without having to depend on a communication protocol of the power conditioner.

[Claim 6]

The numerical value management system according to claim 5, wherein the numerical data includes measured data acquired from the devices installed at a plurality of the power generation systems.

[Claim 7]

The numerical value management system according to claim 6, wherein one of the numerical strings is data representing an amount of solar radiation acquired particularly by the power generation system including an

actinometer among the plurality of power generation systems, and by using the data identification ID, the data representing the amount of solar radiation is utilized to predict an amount of generated power in power generation systems other than the power generation system and/or to perform maintenance of power generation systems other than the power generation system.

[Claim 8]

The numerical value management system according to claim 7, wherein an application server executing the application detects an abnormality, a failure, or age-related degradation of a device in the power generation system based on the numerical data.

[Claim 9]

The numerical value management system according to claim 7, wherein an application server executing the application issues a request for specific data in the numerical data acquired in the plurality of power generation systems and acquires a total value of the specific data.