Introduction of the Environmental Dust Test Device

SIBATA SCIENTIFIC TECHNOLOGY LTD.

Particulate Organism Division

SIBATA SCIENTIFIC TECHNOLOGY LTD.

General Overview

Products in the consumer sector have become smaller and more precise, and is assumed that they will be utilized in various environments. Various manufacturers have been performing tests on the product to improve performance and reliability in the research and development stages. Environmental tests are one of the tests that is recently receiving more attention.

General Overview

This test evaluates product performance/functions when undergoing what would be considered typical environmental stress (temperature, humidity, vibration, air pressure) once manufactured such as change in temperature and humidity conditions, setup of environmental conditions of air contamination during packing, shipping, transportation, storage, setup, operation, disposal. Dust particles and corrosive gases are representative of conditions of air contamination; these concentrations can be set at an optional level and exposed for a certain time. SIBATA has developed various environmental test apparatus that are capable of supplying stable concentrations of dust particles and gases by applying environmental measurement device and control technology. These apparatus have been widely utilized by computer manufacturers, optical disk and acoustic instrument, automation device, and precision instrument makers.

Features

- Capable of testing JIS test particulates, various gases, and dust particulates.
- Dust concentrations within the chamber can be continuously recorded by the light scattering method dust meter.
- Automatic concentration control is possible by utilizing the continuous dust generator in conjunction with the dust concentration meter.
- Has a built-in exhaust treatment device which removes and exhausts test particulates and gases.
- Air supply to the chamber is cleaned by a high performance filter; tests environments under class 1000 is also possible.
- Capable of testing temperature and humidity conditions when used in conjunction with an air device.

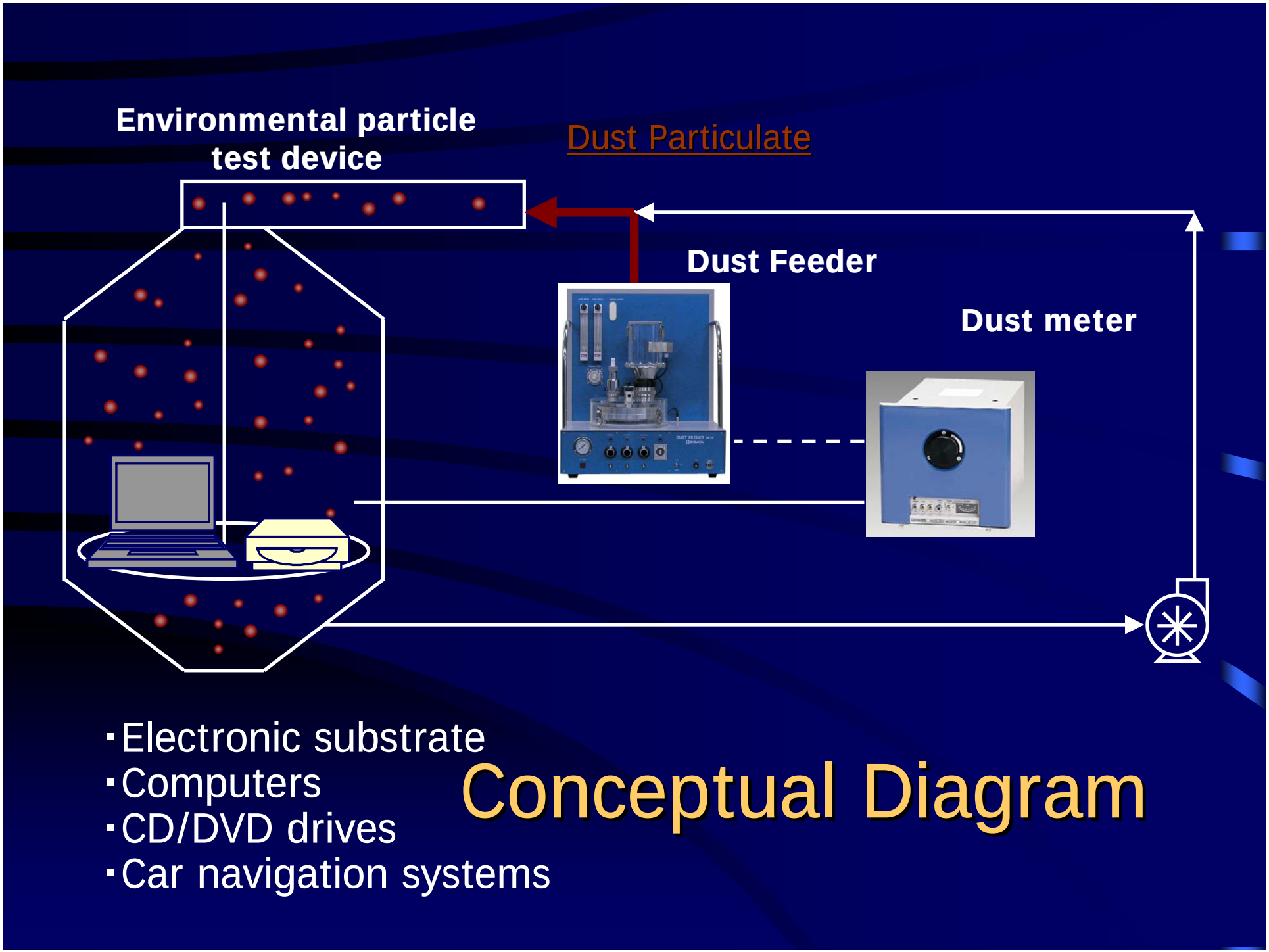
Uses

- Functional tests of computers and related instruments
- Functional tests of semi-conductors and mount print substrate
- Dust particle, gas exposure function tests of precision instruments
- Gas endurance tests of optical instrumentation
- Endurance tests of electrical parts of automobiles



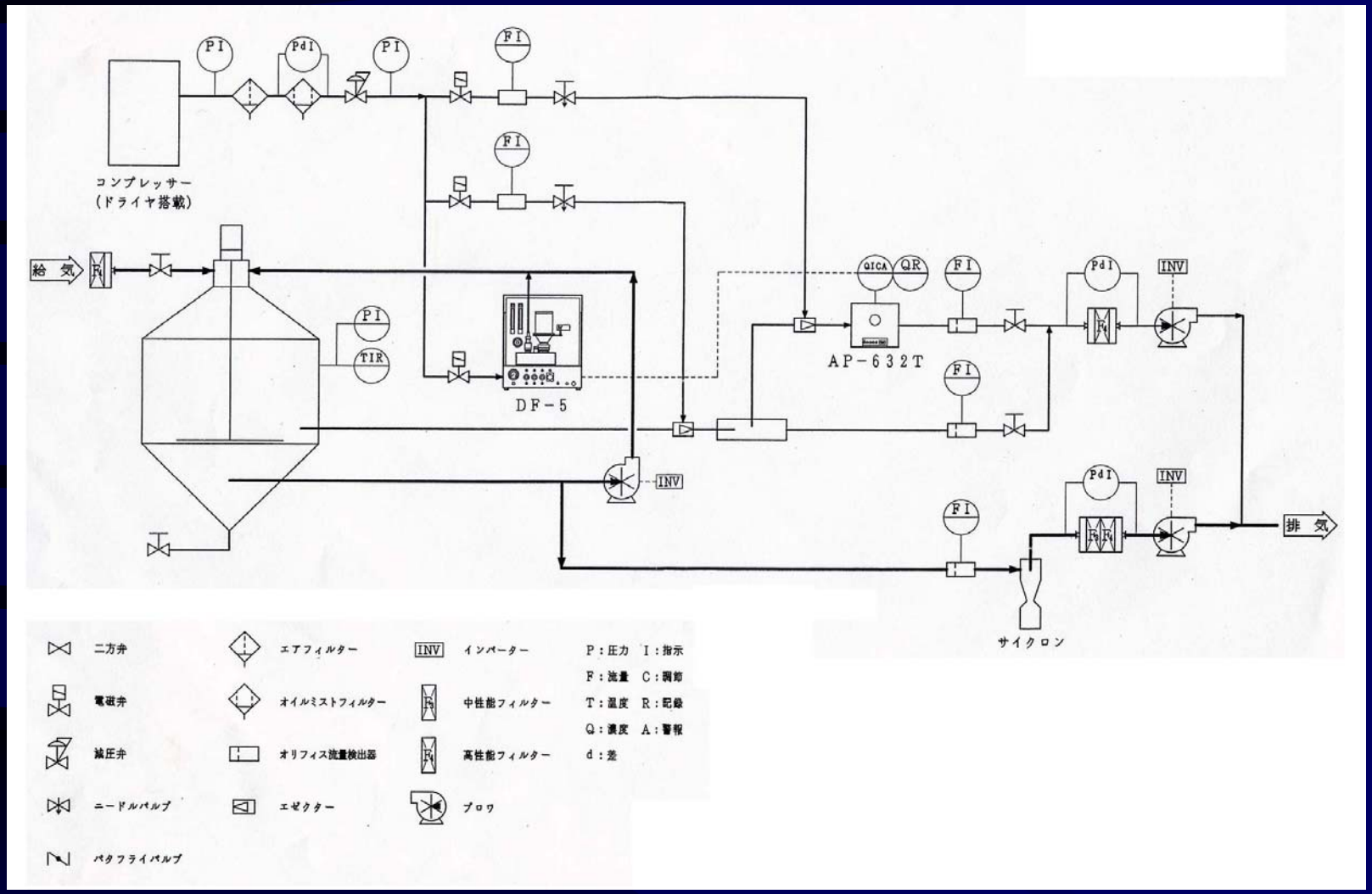




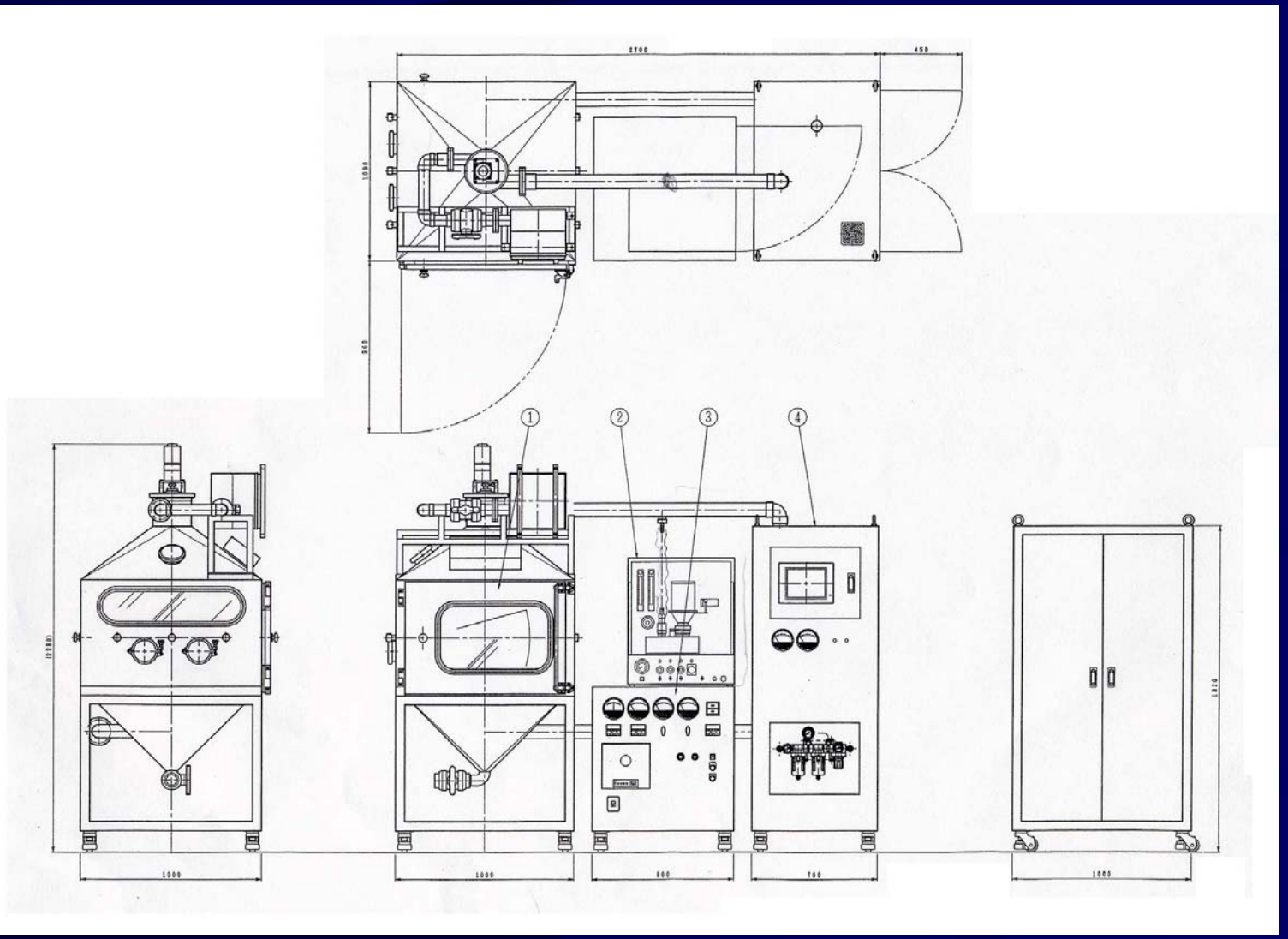


- Electronic substrate
- Computers
- CD/DVD drives
- Car navigation systems

Conceptual Diagram



Representative Flow Diagram



Setup Example

Model DTS-11

General Overview of Device

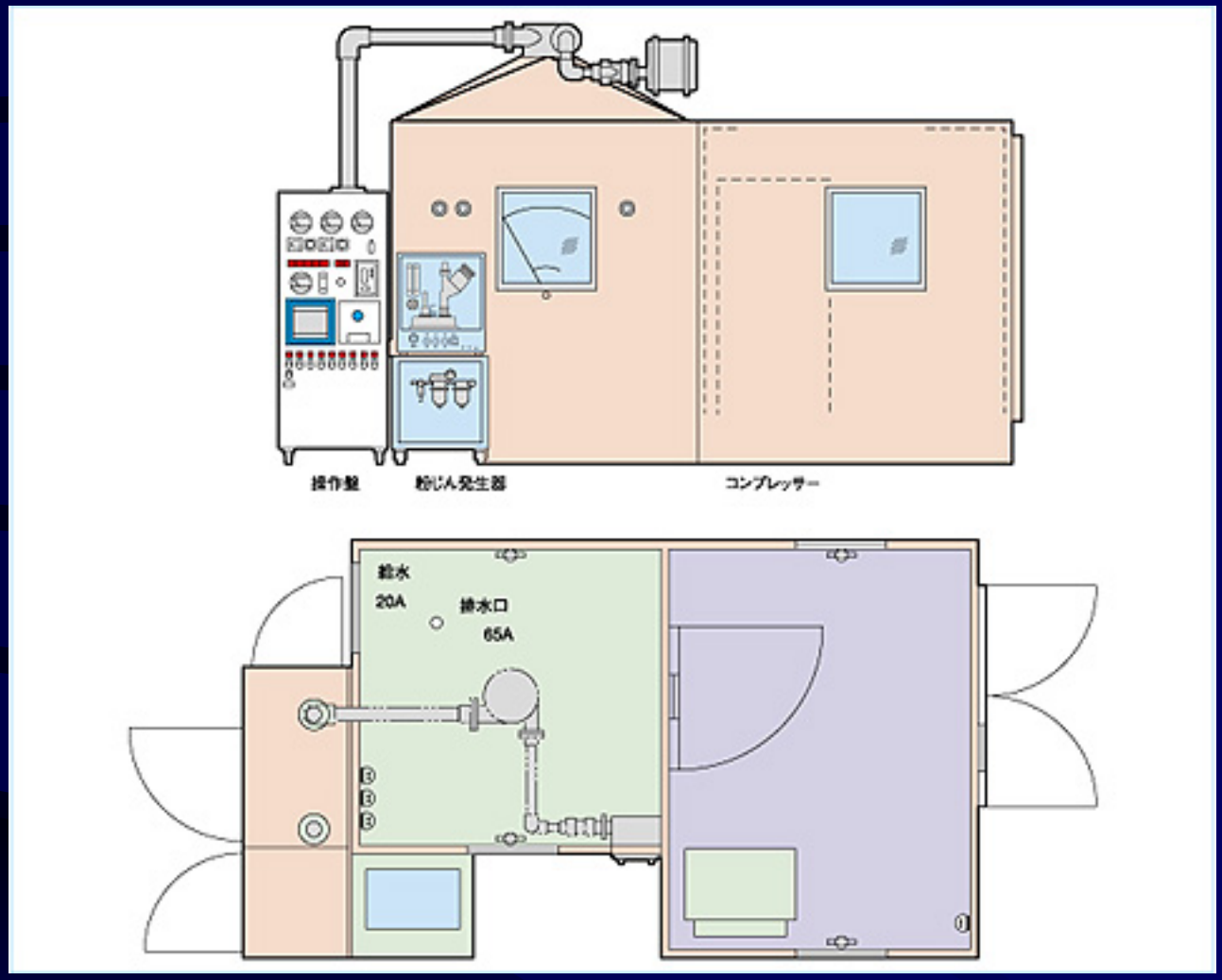
- This device is designed to test effects (load) of dust particles on specimen by setting up specimen in an environmental test room (chamber) and supplying and circulating a determined and controlled concentration of dust particles. The construction of the device can largely divided into a control panel, environmental test chamber, dust generator, and exhaust treatment apparatus.

Features

- Able to control a wide range of concentrations from low concentrations to high concentrations.
- Dust concentration is continuously measured with a digital dust monitor and printed with a recorder.
- A warning lamp will light and a buzzer will notify you of concentration abnormalities and malfunctions of the exhaust blower.
- Test particulates are treated with an exhaust cyclone, and high performance filters; only cleaned air is exhausted.

Specifications

Model	DTS-11
Test Particulate	JIS Particulate
Dust Concentration	~ 100mg/m^3
Dust Generator	Dust Feeder, Model　DF-3
Ventilation flow rate	~ 300L/min
Flow rate adjustor	Frequency invertor
Concentration Observation	Dust Concentration Control Unit, Model　MR-632
Concentration control	ON/OFF control
Supply/Exhaust Treatment Device	High performance filter
Power	AC100V, AC200V 3phase
Environmental Test Room	Dimensions　1000（W）×1000（D）×600（H）mm(widest part)，Material SUS304



Model DTS-12

Overview of Device

- This device is a scaled-up version of the model DTS-11, and is designed to be used in conditions where the test specimen are large or when temperature and humidity need to be setup in the environmental chamber.

Features

- Is suited for large test specimen because the door of the entrance to the test chamber is large.
- Conditions inside the test chamber can be observed from the window.
- Heavy test specimen are also easily setup using the slope in the entrance.
- Has a wide range of concentration control from low concentrations to high concentrations.
- Air conditioners can be added optionally.

Specifications

Model	DTS-12
Test Particulate	JIS Particulate
Dust Concentration	~ 500mg/m^3
Dust Generator	Dust Feeder model DF-5
Ventilation flow rate	~ 1000L/min
Flow rate adjustment	Frequency inverter
Concentration observation	Dust Concentration Control Unit, model MR-632
Concentraion	ON/OFF Control
Supply/Exhaust treatment device	High performance filter, cyclone
Power	AC200V 3-phase
Dimension of test chamber	Main room 2000（W）×2000（D）×3000（H）mm, Front room 2000（W）×2000（D）×2300（H）mm
Material of test chamber	insulation……hard urethane, inside panel……stainless wire, Outside panel…… colored steel plate

Related Products

- Particle Generators
  - Dust Feeder
  - Cotton Dust Generator
- Digital Dust Meter
- Dust Concentration Control Unit

Dust Feeder Model DF-3

Dust Feeder Model DF-5

Digital Dust Meter Model AP-632

Dust Particle Concentration Control Unit Model MR-632

Delivery History

◆NEC	Fuchu, Japan	03. 88
◆Hitachi	Nakajyou, Japan	04. 88
◆Hitachi	Asahi, Japan	10. 88
◆Ricoh	Hadano, Japan	11. 88
◆Olympus Optical	Hachiouji, Japan	08. 89
◆Sony Corp.	Honatsugi, Japan	09. 90
◆Hitachi	Odawara, Japan	09. 90
◆Fujitsu	Kumagaya, Japan	01. 92
◆Sony Corp.	Shinagawa, Japan	03. 92
◆Panasonic	Shikoku, Japan	05. 94
◆Mitsumi Electric Co., Ltd	Honatsugi, Japan	07. 95
◆Sony Corp.	Honatsugi, Japan	08. 95
◆Sony Corp.	Honatsugi, Japan	04. 96

Delivery History

◆Columbia Music Entertainment Inc.	Shirakawa, Japan	08. 96
◆Aiwa	Utsunomiya, Japan	01. 97
◆Nagano Industrial School	Nagano, Japan	03. 98
◆Mitsumi Electronics	Tendo, Japan	07. 98
◆Panasonic	Osaka, Japan	12. 98
◆Sony Corp.	Kita-Shinagwa, Japan	05. 99
◆Fujitsu	Numatsu, Japan	09. 99
◆Sony Corp.	Konan, Japan	10. 99
◆Fujitsu	Akashi, Japan	12. 99
◆Fuji Film	Odawara, Japan	05. 00
◆Sony	Shinagawa, Japan	11. 01
◆Panasonic	Yokohama, Japan	03. 02
◆LITE－ON	Taiwan	09. 04

Delivery History

◆Sony	Sendai, Japan	03. 05
◆Sony EMCS	Sakado, Japan	07. 05
◆Panasonic	Fujisawa, Japan	11. 05
◆Pioneer	Tokorozawa, Japan	01. 06
◆Korea KTL	Korea	05. 06
◆Panasonic	Kadoma, Japan	02. 07