

DDM-HAL 2

High : 35cm
 Width : 38cm
 Dept : 23cm ※
 ※Excluding probe

Tochigi Prefecture 2010 2011 2013 2014
 Certified Frontier Enterprise Product

tanaka
 ELECTRIC LABORATORY



Example of Applications/Facilities

- Garbage incinerator plants
- Industrial waste incinerator bag filter outlet
- Small scale boiler electrostatic precipitator (EP) outlet
- Shipboard boiler outlet duct
- Other various facilities exhausting dust

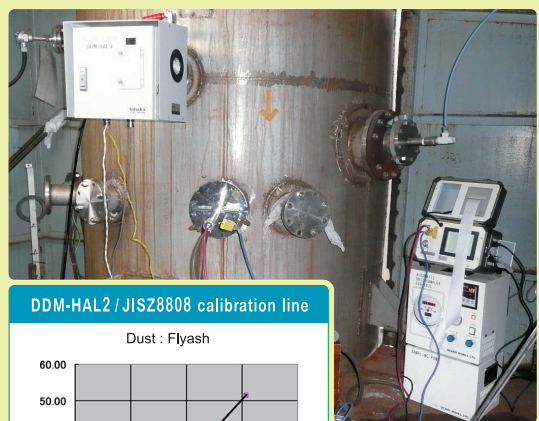
Probe type non-sampling light scattering method Dust density monitor **DDM-HAL 2**

DDM-HAL2 is a dust monitor designed for stationary sources such as industrial boilers and incinerators, and shipboard boilers to monitor dust in real time. Air pollution has increased environmental and public health risks, and the government air pollution control law is getting tougher. To comply with the law it is important to continuously manage the dust monitoring data along with the isokinetic sampling method (JIS method) which happens every few months. DDM-HAL2 is a dust density monitor designed for small scale incineration facilities and for shipboard boilers. The advantages of DDM-HAL2 are the high performance, the low cost, the durability, the easy installation, the easy and low maintenance, and the automatic span calibration – there is no need to remove the dust detector from the installation while calibrating. DDM-HAL2 equips automatic calibration function. It is high sensitive and can measure low to high density dust including PM2.5 up to 0.03 micro meter dust particles in real time. The dust density data from DDM-HAL2 can be used as an evidence when you need it. Although use of a dust detector is not required by law, The vision of DDM-HAL2 is to help the small facilities exhausting flue gas to build environmental sustainable business and to achieve environmental CSR, but also to increase the productivity and decrease the cost of the productivity. Tanaka Electric Lab dust monitor products comply with Japanese Industrial Standard Z8852 (JISZ8852), which is for a method of automatic dust monitoring.

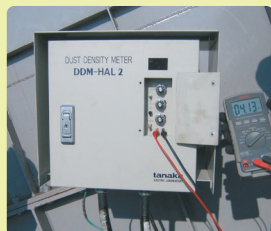
※1 At 2013 September 20 Japanese Ministry of Economy, Trade and Industry published Continuous Monitoring Method for Dust Density in flue gas. Our dust density monitor products complies with JISZ8852.

DDM-HAL 2 Features TANAKA ELECTRIC LABORATORY

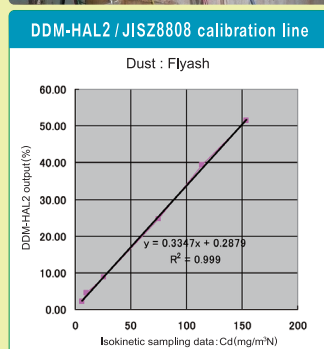
- High sensitive optical sensor
It can measure up to 0.03 micro meter dust particles.
- Accurate and reliable dust detection
Dust concentration in laminar flow in duct and chimney is unevenly distributed in the flue gas. The Tanaka Electric Lab. light scattering method optical sensor can detect dust particles in larger area inside duct and chimney than other dust density monitors.
- No need to stop the plant for maintenance- integrated zero span calibration
Automated span calibration including the optical system is integrated, and you don't need to stop the plant for maintenance.
- Insensitive to ambient light (sun light, illumination light, etc)
The optical sensor is designed to have tolerance for ambient light, and the dust detector can be installed in short duct and chimney.
- Easy one-hole installation
It can be installed in one place on a duct/chimney. Unlike optical penetration method, there is no need to make two holes and to adjust the optical axis.
- Long term maintenance free operation
using the long life LED, the integrated calibration function, and patented proven self clean system for the optical sensor
- Tolerance for vibration
Simple and robust design; it can be used in large vibration places such as shipboard.



(installation operation)



(electric adjustment)



(correlation coefficient data at laboratory)

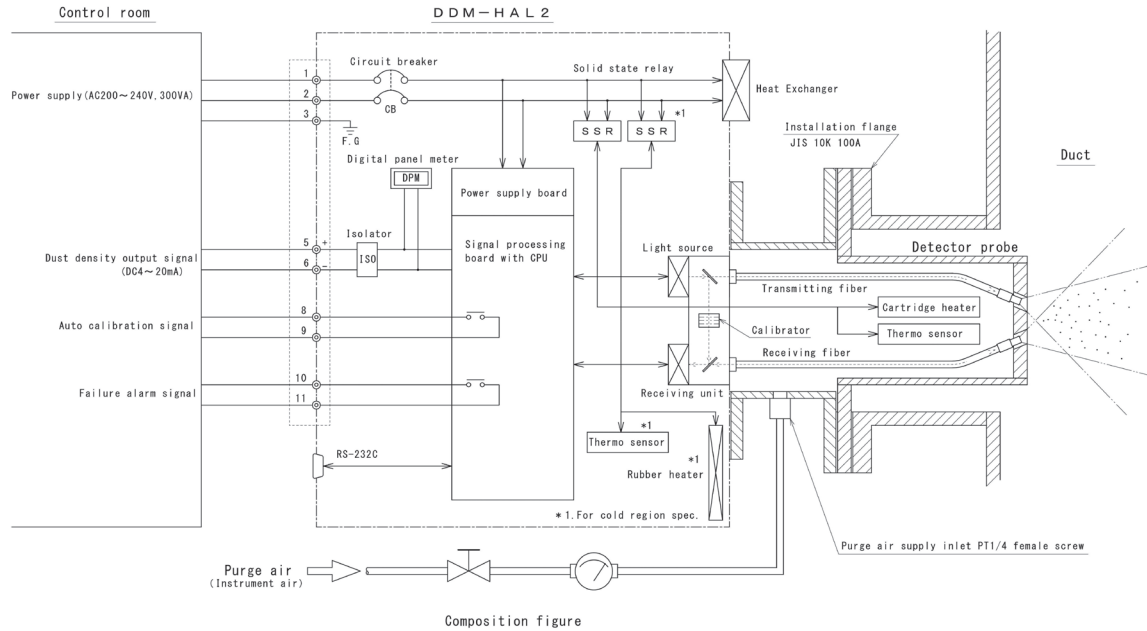
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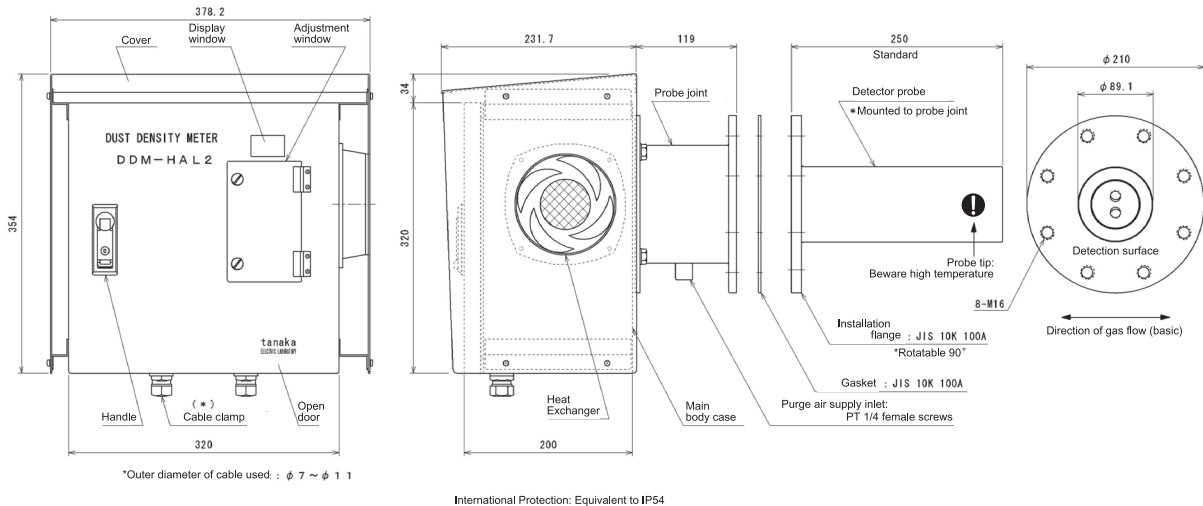
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DDM-HAL2 System Diagram



DDM-HAL2 Outside View



Specifications

(1) Structure	Probe type, non-sampling light scattering method (heater integrated in probe to prevent condensation)
(2) Measurement	Theory 60 degree backward light scattering method
(3) Light Source	Red color LED (core frequency 625 nm)
(4) Measurement Range	0~100 % output range of output 0~100 mg/m ³ or above, equivalent of the output of a dust density monitor for chimney can continuously change toward wider range than the output value. However, the measurement range may be affected by the properties of the detecting object. * the smallest detectable dust particle diameter: up to 0.03 micro meter
(5) Output Signal	DC 4~20 mA isolated output (load resistance less than 550Ω) RS-232C I/F output
(6) Display	digital panel meter displaying 0~100%
(7) Warning/failure Output Signal	For power loss, LED failure, abnormal voltage of internal power supply it will output 1 as logical sum signal.
(8) Zero/Span	Connection output signal: dry "a" connection point, Voltage /Current of Connection Point AC/DC200 V, 0.1A Calibration auto or manual calibration (factory initial calibration is automatic; zero calibration is only for manual) Automatic calibration cycle: selectable either 7 days or 30 days (factory initial setting is 30 days) Automatic Calibration Contact Output: dry "a" connection, Connection Output AC/DC 200V, 0.1A The span coefficient value calculated from the automatic calibration can be displayed instead of the measured dust value on the digital panel meter when the button inside the panel is pushed.
(9) Integration Calculation Time Rage	approximate 1~100 second
(10) Moving Average Time	0~15 minutes at 1 minute intervals (0 = no average value insertion)
(11) Temperature Stability for output	± 2% / 10°C (designed core 20°C)
(12) Correlation Coefficient value to isokinetic sampling	above 0.98
(13) Condition of Flue Gas Temperature	below 250°C Pressure: below 100kPa
(14) Power Supply	AC100V(optional 240V) ±10% (50Hz,60Hz), above300VA
(15) Operational Temperature	-10~50°C
(16) Enclosure protection level	complying with IP54 (outdoor use)
(17) Size	378.2×354×350.7mm (excluding probe and cable clamp)
(18) Weight	Approx. 30kg

Distributors