HORIBA

Micro Dilution Tunnel
MDLT-ONE
Partial Flow Dilution Sampling System

HORIBA ONE PLATFORM

Explore the future

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MDLT-ONE

The MDLT-ONE is designed to sample particulate emissions using the partial flow dilution method. A small portion of the total exhaust is diluted with HEPA* filtered air to create a constant flow rate through particulate filters to collect Particulate Matter (PM). Compliant to the latest regulations, the new MDLT-ONE is very compact and offers faster response by the use of high precision venturi flow meters and a piezo actuated valve.

* HEPA : High Efficiency Particulate Air

Features

• Small package

Heated filter system and flow controllers installed in a single rack. Swivel connection of tunnel section to cabinet allows flexible installation.
Auto filter changer* can also be mounted in the main rack for space efficiency.

• Automatic calibration software enhances accuracy and ease of use

The MDLT-ONE series performs automatic calibration by flowing air in-series through the two venturi flow meters and correcting any difference to zero in the software. This can be included into an automated sequence within a test template.

• Integrated Operating Platform

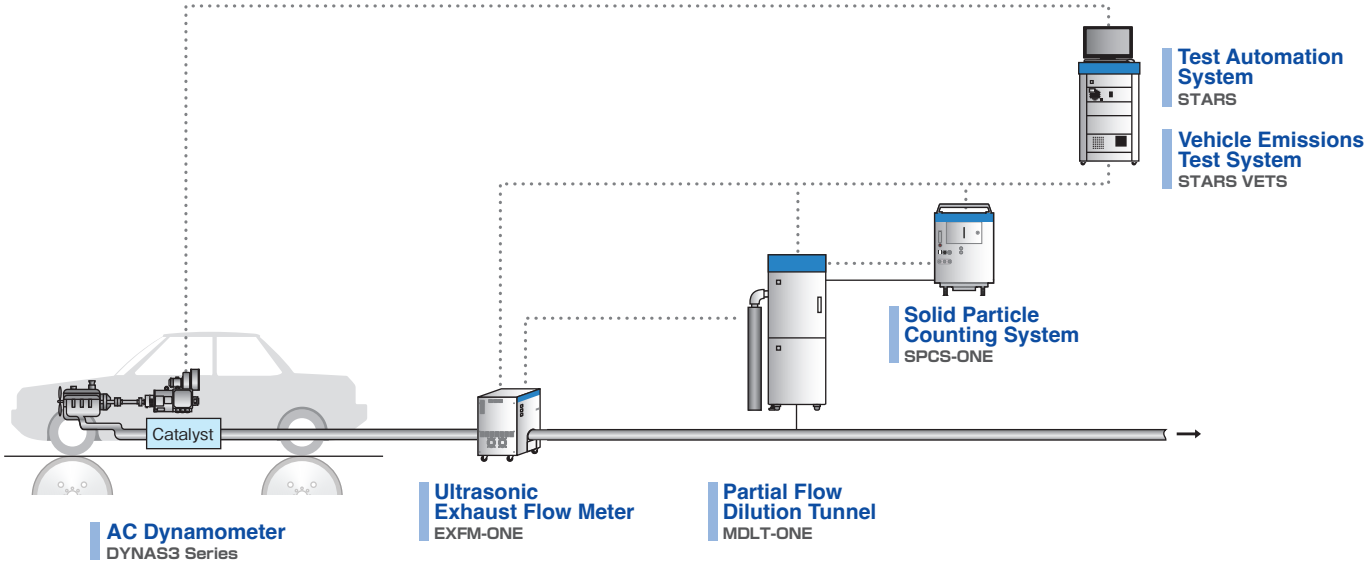
HORIBA ONE series systems employ a common user interface, “HORIBA ONE PLATFORM” offering future expandability and ease of integration into Test Automation Systems.

HORIBA ONE PLATFORM

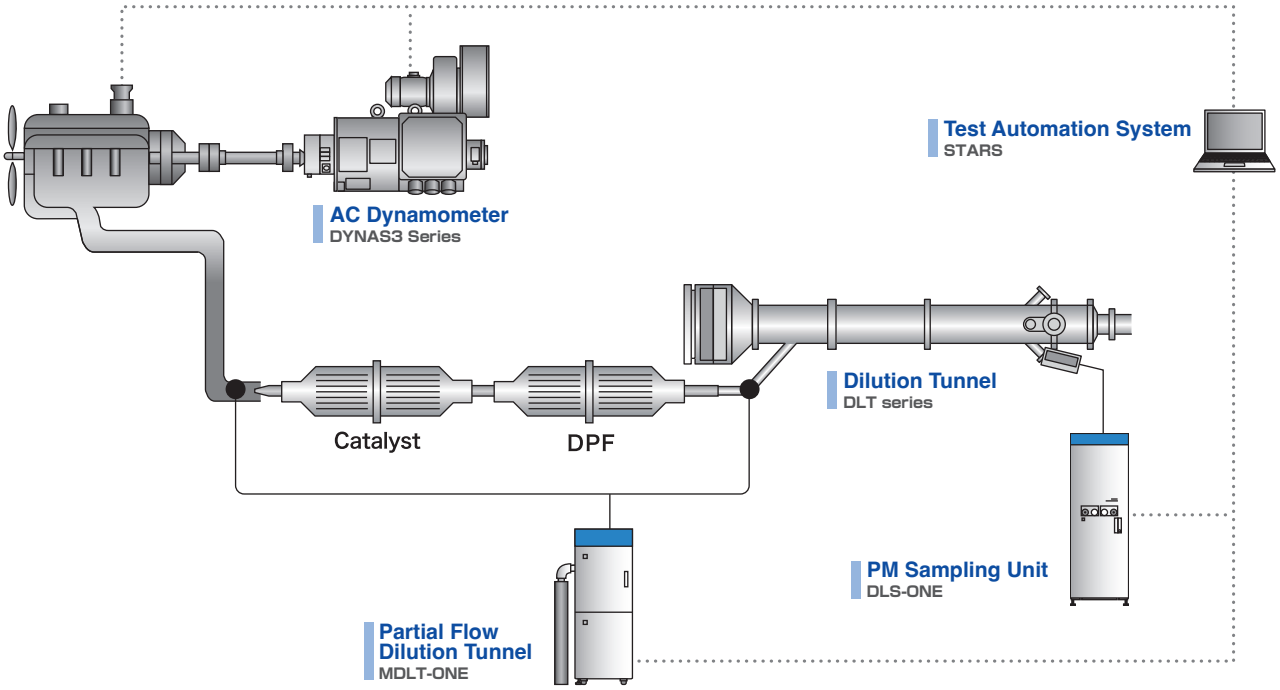
* Please contact HORIBA, when you ordering

Applications

PM Emission Measurement of All Engines



R&D Support of Engine and After Treatment System



Complies with worldwide emissions regulations

ISO-16183
Japan: Post post new long term
EU: Euro VI (HDV)
EU: Stage IV / V (NRMM)
US: 40 CFR Part 1065/1066

Specification

System outline	
PM sampling method	Partial flow dilution method
Control modes for dilution	Proportional sampling mode (Const. split ratio)/ Fixed dilution ratio mode (Const. dilution ratio)/ Fixed flow rate mode (Manual control)
Control methods for dilution	・Real-time control based on analog input of exhaust flow rate ・Control based on learned pattern of exhaust rate
Required signal for gas sampling	Isolated analog signal (0 to 10 V)
Flow rate of diluted gas	25 to 80 L/min*1 (under the condition of 20 °C and 101.3 kPa)
Accuracy of dilution ratio	Within ±5 % (Confirmed by measuring CO_2) When dilution ratio=15 rate at 20 °C and 101.3 kPa : 53 to 80 L/min
PM mass calculation*2	PM mass (in g/test or g/kWh) can be calculated and saved, based on integrated values of flow rated and dilution ratio
Configurations	
System configuration	・Main unit : Dilution-tunnel unit ・Operation unit : PC, monitor, keyboard and mouse (table is not included)
Utilities	・Purified air : for dilution gas, 400 to 700 kPa, oil free, at least 100 L/min (at 20 °C and 101.3 kPa)
Power supply voltage and frequency	・Main unit : 100/110/120/200/220/230/240 V AC, 50/60 Hz, single phase ・Operation unit : 100/110/120/200/220/230/240 V AC, 50/60 Hz, single phase
Power requirements	Main unit : Max. 3.0 kVA / Operation unit: Max. 0.5 kVA
Dimensions	・Main unit : 570 (W) x 730 (D) x 1700 (H) mm ・Space for operation unit : 900 (W) x 500 (D) mm (table is not included)
Mass	Main unit : Approx. 300 kg (excluding operation unit)
Number of filter lines	Max. 6 lines (5 for sample, 1 for bypass)
Type of filter holder	・ϕ70 mm type : actual PM sampling area ϕ60 mm, with back-up filter ・ϕ47 mm type : actual PM sampling area ϕ38.8 mm*1, with back-up filter*1
Operating conditions	
Sampling Pressure	Between atmospheric pressure and up to 40 kPa　Back pressure of exhaust line : Less than 1 kPa
Options	
Filter auto-changer*3	Changer for automatic replacement of PM filter (ϕ 47 mm)
Valve switching	Additional air valve before filter (Replacement of sampling filter on bypass mode)
HOST interface*3	LAN communication using a 10 Base T port Conforms to IEEE802.3 (ISO880 2/3)
Conditioner for dilution air / Compressor	

*1, For the filter face velocity in the regulations (less than 100 cm/s), the flow rate for the ϕ47 mm filter must be 65 standard L/min.
*2, Input the amount of PM collected on filter to calculate PM mass. It is necessary to input engine output (kW) to calculate the PM mass engine output (g/kWh).
*3, Please contact HORIBA, when you ordering.

IMS

The HORIBA Group adopts IMS (Integrated Management System) which integrates Quality Management System ISO9001, Environmental Management System ISO14001, and Occupational Health and Safety Management System ISO45001.
We have now integrated Business Continuity Management System ISO22301 in order to provide our products and services in a stable manner, even in emergencies.

Please read the operation manual before using this product to assure safe and proper handling of the product.

https://www.horiba.com/int/

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