

HORIBA
Automotive Test Systems

ON-BOARD EMISSIONS MEASUREMENT SYSTEM
OBS-ONE



On-board Emissions Measurement System

OBS-ONE SERIES

Total System for Regulation Compliance and Engine/Vehicle R&D

OBS-ONE is the latest Portable Emissions Measurement System designed for engine/vehicle certification under real road conditions.

It measures concentrations of emissions (CO, CO₂, THC, NO_x, NO₂), particulate matter, exhaust flow rate, GPS data, environmental conditions (atmospheric temperature, humidity and pressure) and calculates mass emissions.

OBS-ONE features the highly adaptable, intelligent operating platform called "HORIBA ONE PLATFORM" which integrates other OBS-ONE series product and those data.

HORIBA has developed broad emission test applications for certification and engine/vehicle R&D, such as simulating a real-world driving event in the test cell with the Test Automation System- STARS. This simulation requires data combined from the OBS-ONE and a drive recorder.



LDV Type

HDV Type

Simple and Flexible Safe, User-friendly System

● Easy to Install

- Easily mounted on any vehicle (modular and front access design)
- One-touch fitting for module and cable connections

● Stable Operation Over Long Driving Periods

- Low power consumption for long operation
- Battery can be changed to AC power supply or backup battery without being powered off by using power exchange unit

● Safe

- Safe in real driving without bottles (LDV type)
- Equipped with emergency button to stop power and gas supply

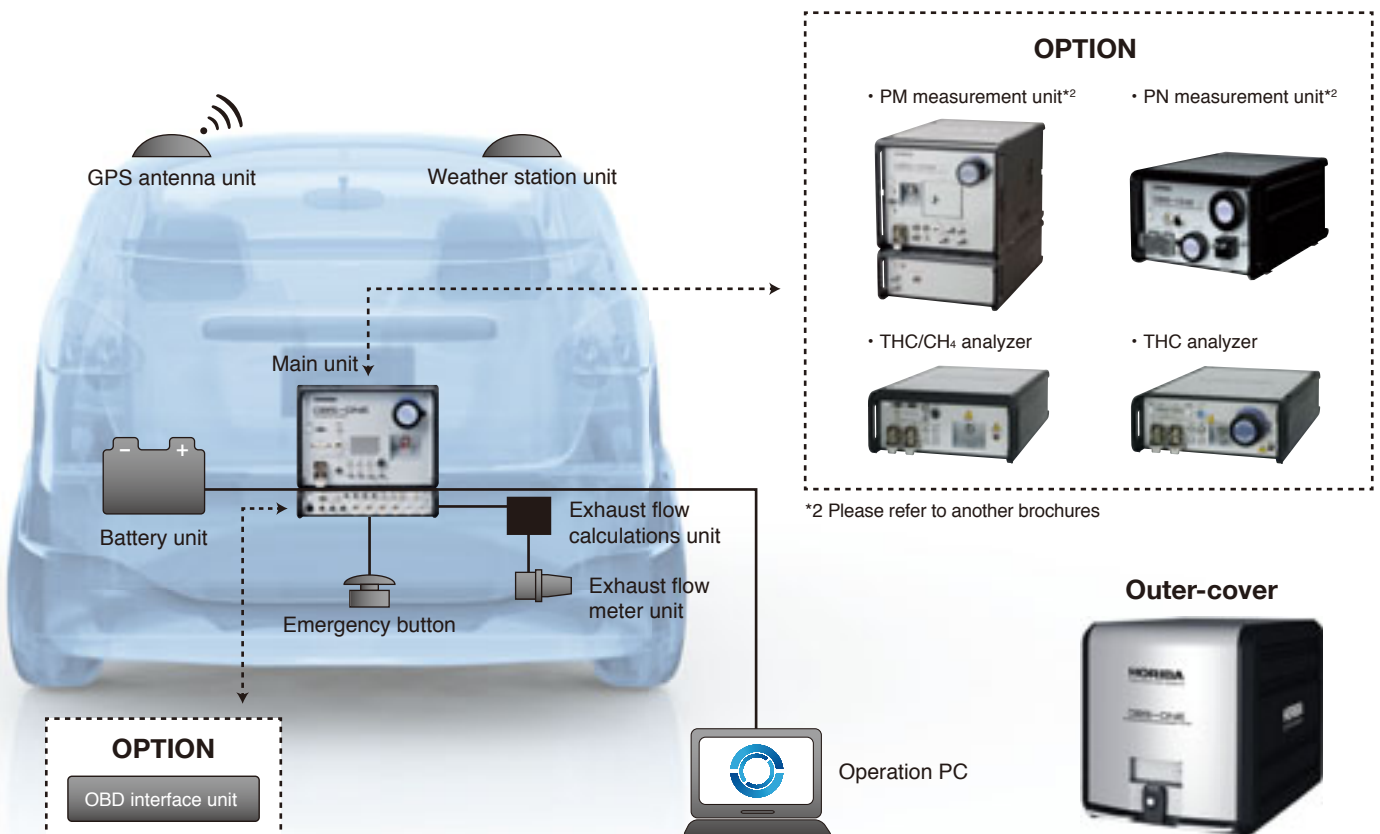
● Accurate

- Accurate over a variety of environmental variables (atmospheric temperature, atmospheric pressure, vibration)*1
- UPS (Uninterruptible Power Supply) protects measurement data in the case of the battery cut-off unexpected

*1 Please refer to product overview in the next page



System Configuration



Complies with the latest regulation requirements



LDV



EU Euro 6 (Real Driving Emissions)



HDV



EU Euro VI (Commission Regulation (EU) No.582/2011)



US EPA CFR 1065 subpart-J

PEMS Applications

● Measurement

Comprehensive test package includes self-diagnosis, quality check, and sensitivity calibration before testing.

Guides the entire process (preparation, measurement data post processing, etc.) from before to after testing.

[Real-time Validation and Guidance]

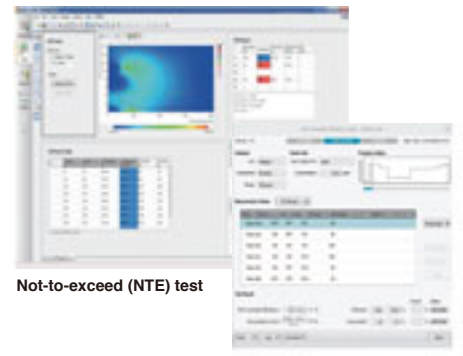
- Checks measuring data during testing to avoid invalid results
- Driver can concentrate on driving without any operation once measurement is started

● Data Post Processing

Complicated process of calculation and analysis made simple

- Suitable calculation and result output for LDV/HDV
- Makes test report for certification
- Shows the camera-recorded drive replay and the GPS map related to measured data
- Complies with ASAM-ODS* standard

*ASAM-ODS : Association for Standardization of Automation and Measuring Systems - Open Data Service



Not-to-exceed (NTE) test

QC (Quality check) automatic sequence



Post Processing Moving Average Window Work Method (Result) HDV

Window Work Method LDV



Integrated Operation Software “HORIBA ONE PLATFORM”

Integrated Device Management Controller (DMC) with HORIBA ONE series products

The developed software for the OBS-ONE is integrated with the same operating platform as the MEXA-ONE, CVS-ONE and other devices. The intuitive, ergonomic design of the software platform makes system operation easier. System control and a complete system view of other OBS-ONE units are available from one single display.

- User-friendly screen configuration and layout offer both measurement efficiency and convenience



Device View

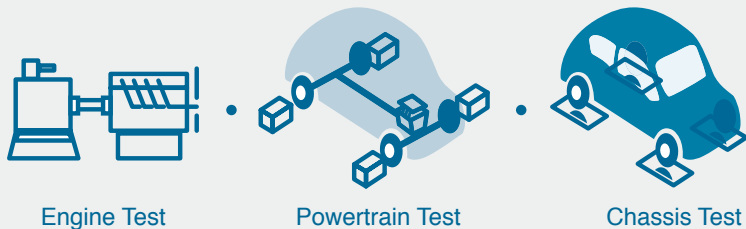
R&D for Engine, Powertrain and Chassis

Achieving real-world simulation in the test lab

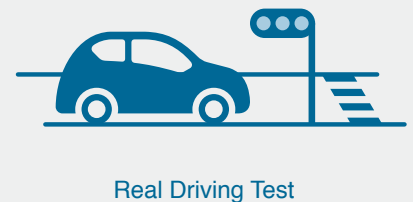
Test Lab x Real-world

OBS-ONE provides real driving emission test as well as real driving simulation in the test lab by utilizing STARS. This comprehensive solution ensures accurate emissions data from both real-road and laboratory testing conditions.

Test Lab



Real-world



Product Overview

Item	LDV Type	HDV Type
Measurement Component	CO, CO ₂ , NO/NO _x (or NO, NO _x , NO ₂)	CO, CO ₂ , NO/NO _x (or NO, NO _x , NO ₂), THC (or THC, CH ₄)
Dimensions*1	Approx. W 350 × D 470 × H 330 mm	Approx. W 350 × D 470 × H 480 mm
Power Requirements	DC 22~28 V	
Power Consumption (at stable state)*2	Approx. 0.25 kW	Approx. 0.5 kW
Battery*3 (Deep-cycle, sealed lead battery)	DC 24V 35 Ah (5 hour rate), Operation time : Approx. 2.5 hours*4	DC 24V 100 Ah (5 hour rate), Operation time : Approx. 3.5 hours*4
Weight (Main unit)	Approx. 32 kg	Approx. 50 kg
Operating Conditions	Temperature: -10 ~ 40°C,*5 Relative humidity: less than 80%, Altitude: 0 ~ 2000 m above sea level	Temperature: 0°C ~ 40°C, Relative humidity: less than 80%, Altitude: 0 ~ 2000 m above sea level

*1 Excluding handle and projection

*2 Length of haled inlet tube LDV type: 2.5 m, HDV type: 6 m,
Atmospheric temperature: 25°C

*3 Nickel hydride battery is an optional unit

*4 Temperature 20°C and depending on battery conditions

*5 Please contact HORIBA if temperature is below 0°C

Analyzers and Sensors

★ NDIR : Non Dispersive Infrared Detection
CLD : Chemiluminescence Detection
FID : Flame Ionization Detection

Component/Item	Measurement Principle *	Measurement Range
CO	Heated NDIR	0-0.5 ~ 10 vol%
CO ₂	Heated NDIR	0-5 ~ 20 vol%
NO/NO _x *6	Heated CLD	0-100 ~ 3000 ppm
NO, NO _x , NO ₂ *7	Heated-dual CLD	0-100 ~ 3000 ppm
THC	Heated FID	0-100 ~ 10000 ppmC
THC, CH ₄	Heated-dual FID	0-100 ~ 10000 ppmC
Sampling Method	Wet measurement	-
Exhaust Flow Rate*8	Pitot flow meter	0-2.0 ~ 0-65.0 m ³ /min
Standard Signal Measurements	Exhaust temperature, Exhaust pressure, Atmospheric pressure, Atmospheric temperature, Atmospheric humidity, GPS signal, Speed	

*6 NO/NO_x: Switchable measurement

*7 NO, NO_x: Simultaneous measurement NO₂: Calculation of NO and NO_x

*8 Exhaust flow rate can be taken by OBD interface unit

<Option>

•OBD interface unit: Supported ISO15765-4/J1939

•External input unit (EI): Analog voltage, Analog current,

Thermocouple, Platinum resistance temperature detector, Frequency

•Power supply unit (PS): Power supplied from AC to system

•Power exchange unit (PE): Can be changed power supply without being powered off

•Heated bubbler unit: Humidifying unit for H₂O interference check and H₂O quenching effect check

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We are always available to provide assistance with specifications and applications. We can also assist in laboratory operation by providing technical information, additional training courses, servicing and maintenance support. Contractual preventative maintenance programs are available upon request.

Contact your nearest HORIBA office or authorized representative for details.



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 OHSAS18001. We have now integrated Business Continuity Management System ISO22301 in order to provide our products and services in a stable manner, even in emergencies.



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