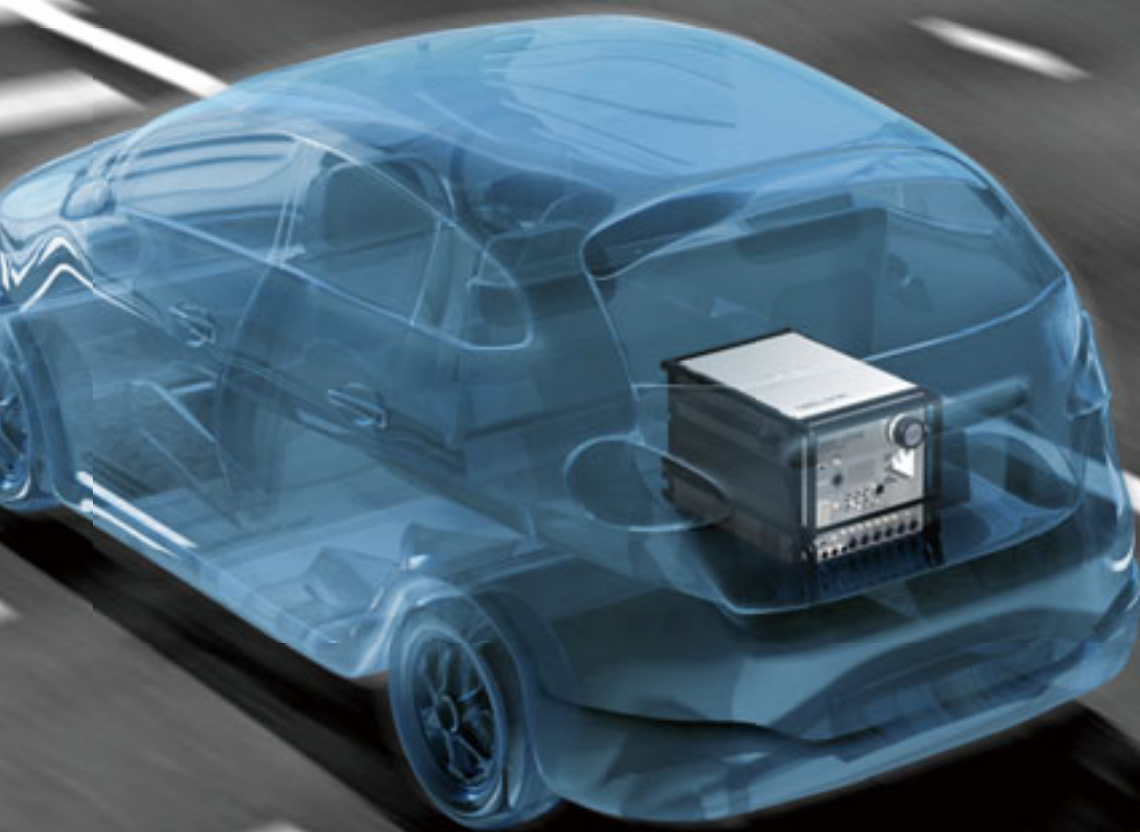


**HORIBA**  
Automotive Test Systems

ON-BOARD EMISSIONS MEASUREMENT SYSTEM  
**OBS-ONE**



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# 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, CO<sub>2</sub>, THC, NO<sub>x</sub>, NO<sub>2</sub>), 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

LDV : Light Duty Vehicle  
HDV : Heavy Duty Vehicle

# 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

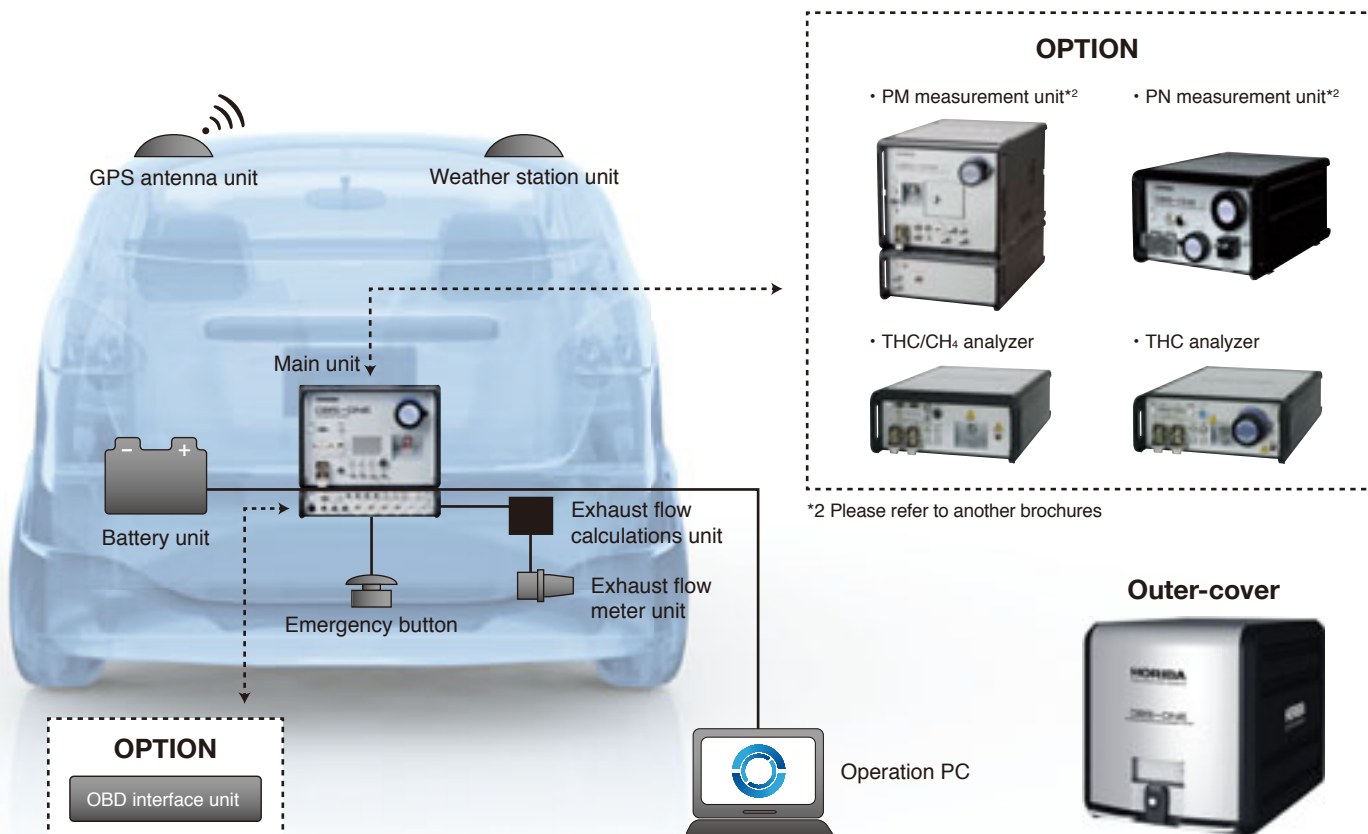
## ● Accurate

- 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 ]

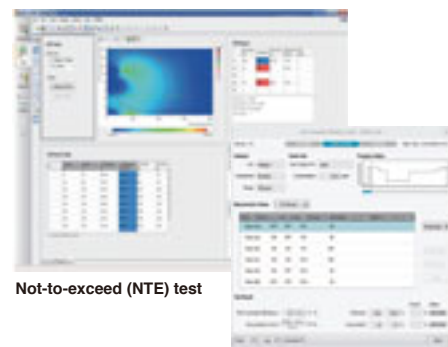
- Checks measuring data during testing to avoid invalid results
- Driver can concentrate on driving without any operation once measurement is started

### ● Data Post Processing

Complicated process of calculation and analysis made simple

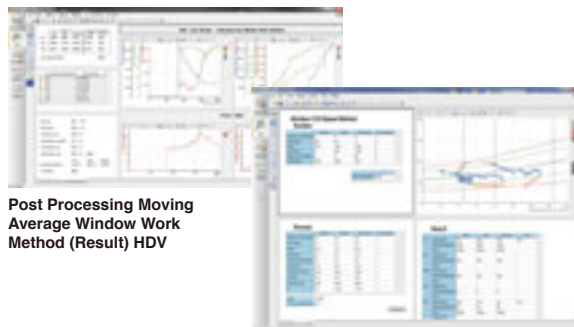
- Suitable calculation and result output for LDV/HDV
- Makes test report for certification
- Shows the camera-recorded drive replay and the GPS map related to measured data
- Complies with ASAM-ODS\* standard

\*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



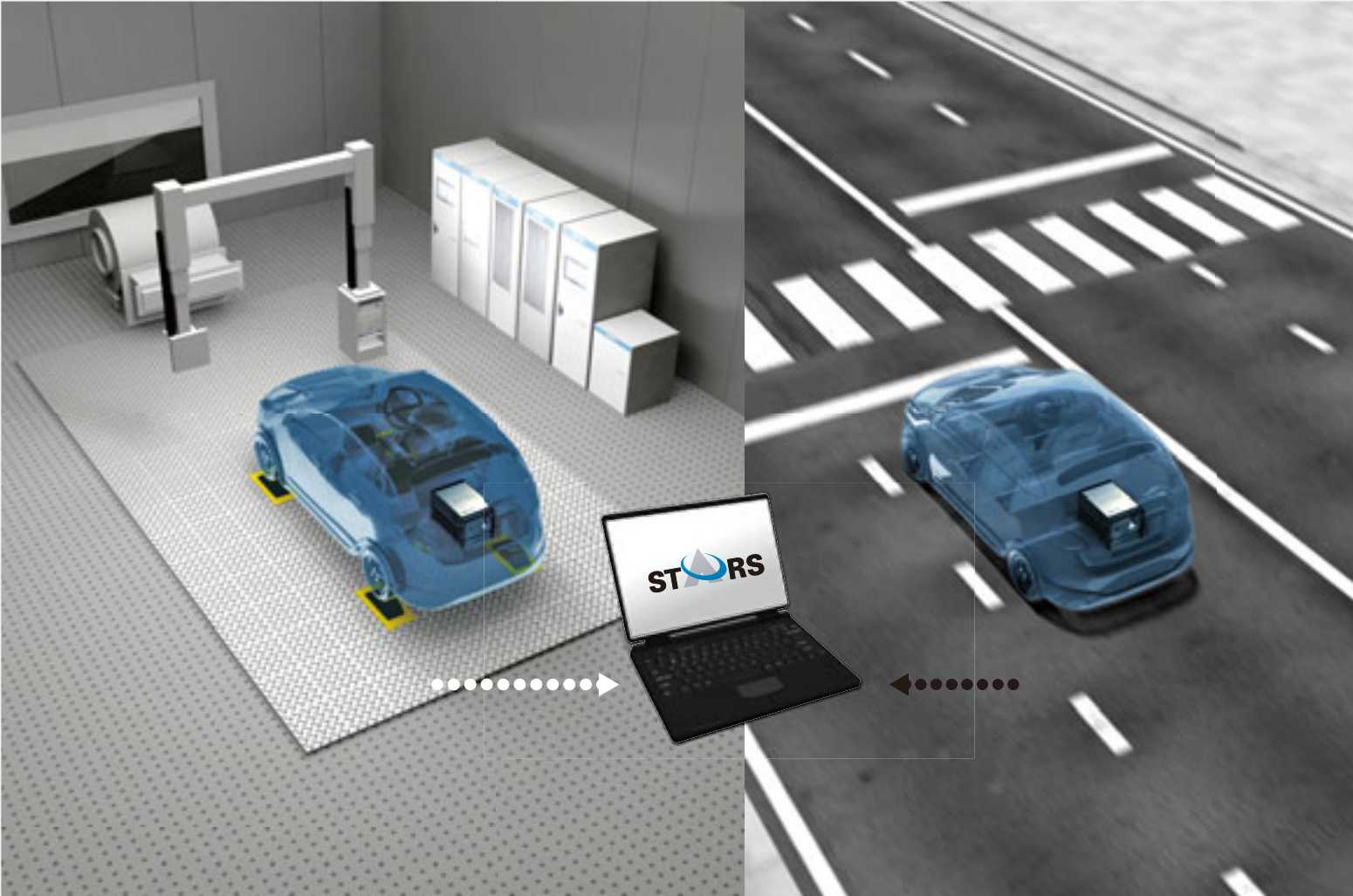
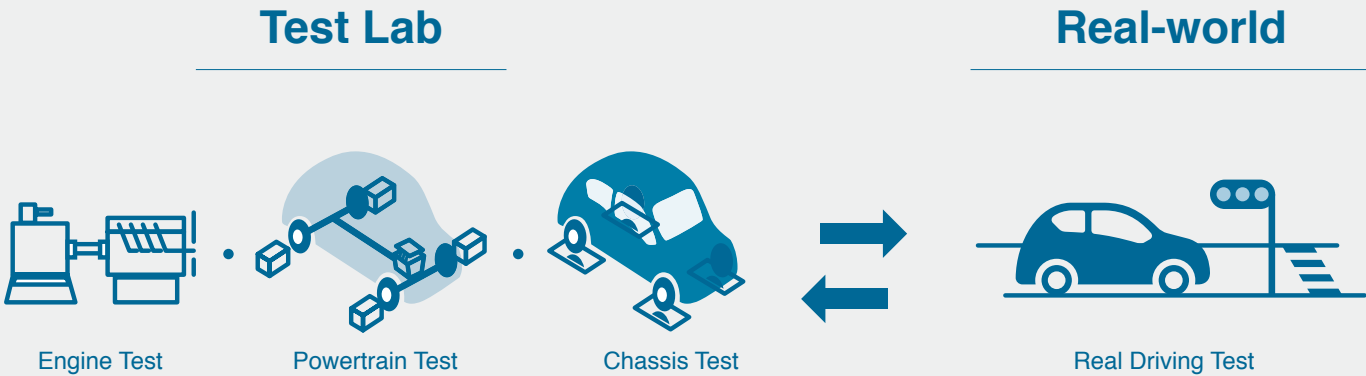
Device View

## 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.



## Product Overview

Item	LDV Type	HDV Type
Measurement Component	CO, CO <sub>2</sub> , NO/NO <sub>x</sub> (or NO, NO <sub>x</sub> , NO <sub>2</sub> )	CO, CO <sub>2</sub> , NO/NO <sub>x</sub> (or NO, NO <sub>x</sub> , NO <sub>2</sub> ), THC (or THC, CH <sub>4</sub> )
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 hated 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 <sub>2</sub>	Heated NDIR	0-5 ~ 20 vol%
NO/NO <sub>x</sub> *6	Heated CLD	0-100 ~ 3000 ppm
NO, NO <sub>x</sub> , NO <sub>2</sub> *7	Heated-dual CLD	0-100 ~ 3000 ppm
THC	Heated FID	0-100 ~ 10000 ppmC
THC, CH <sub>4</sub>	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 <sup>3</sup> /min
Standard Signal Measurements	Exhaust temperature, Exhaust pressure, Atmospheric pressure, Atmospheric temperature, Atmospheric humidity, GPS signal, Speed	

\*6 NO/NO<sub>x</sub>: Switchable measurement

\*7 NO, NO<sub>x</sub>: Simultaneous measurement NO<sub>2</sub>: Calculation of NO and NO<sub>x</sub>

\*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 H<sub>2</sub>O interference check and H<sub>2</sub>O quenching effect check

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