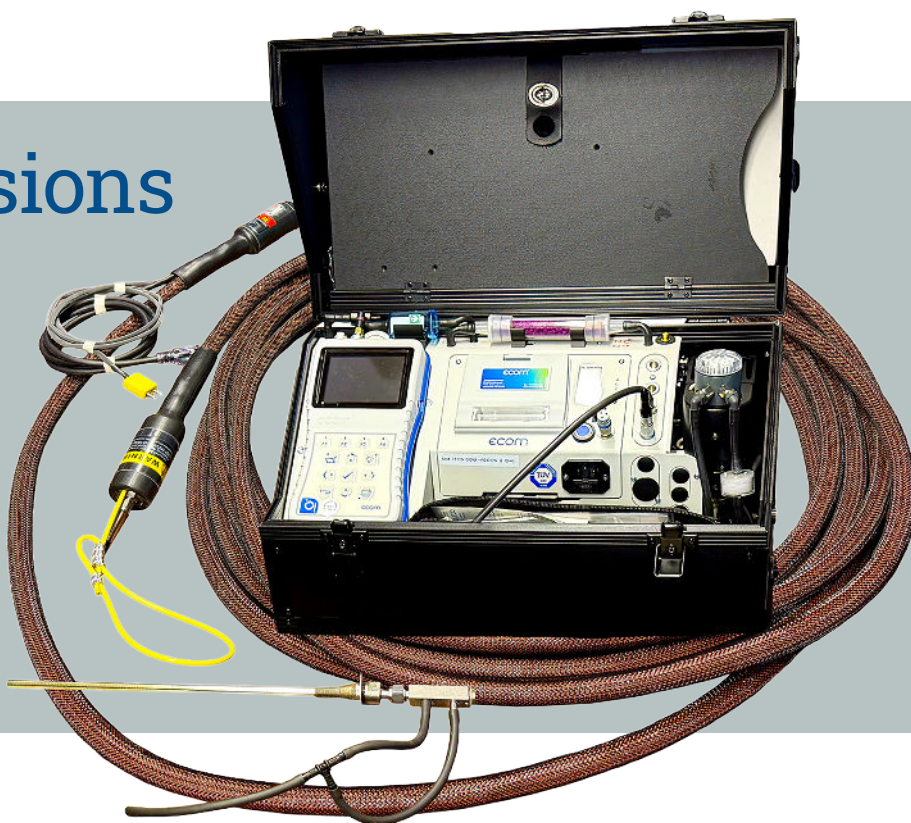




MSAPR Emissions Testing Kit

Specification Sheet



Complete Portable Kit for Reciprocating Engine Emissions Testing

The MSAPR Emissions Testing Kit provides the core equipment required to collect, condition, measure, and document exhaust-gas data from stationary reciprocating engines. Built around a professional portable emissions analyzer, the system is designed for field use where reliable sampling, stable gas temperatures, and accurate emissions measurements are essential.

The kit is suited to engine testing programs supporting **Multi-Sector Air Pollutants Regulations (MSAPR)** compliance and ongoing engine performance assessment.

ECOM J2KN Pro Portable Emissions Analyzer

The analyzer is the central measurement and data-acquisition component of the kit. The sampling system draws in exhaust gas, conditions it, and delivers it to the analyzer, where the installed sensors measure the selected combustion and emissions parameters.

Key Functions

- Portable multi-gas emissions analysis
- Real-time display of measured exhaust-gas concentrations
- Integrated sample-gas conditioning
- Automatic condensate management
- Internal sample pump
- Data logging and reporting capability
- Integrated thermal printer
- Portable remote display/control unit
- Heated sample-line connection
- Temperature and pressure measurement inputs
- Rugged field-ready transport housing

Typical Measurement Capability

Analyzer configuration can be selected to measure parameters including:

- CO (0-10000ppm)
- CO (High) Sensor %
- CO (Low) Non-H₂-Compensated
- NO Sensor (0-5000ppm)
- NO₂ sensor
- SO₂ Sensor
- Full O₂ Sensor
- CH₄ IR Sensor (100%)
- CxHy Sensor (Pellistor)
- CO₂ IR Sensor (100%)
- CO₂ IR Sensor (20%)

The J2KN Pro platform can be configured specifically for engine and industrial combustion applications. ECOM identifies the engine version as suitable for measurements on generators, CHP systems, and reciprocating engines operating under high exhaust temperatures and varying load conditions.

Gas Conditioning

The analyzer incorporates a gas-conditioning system intended to remove condensate from the sample stream before the gas reaches the measurement sensors.

Depending on configuration, the J2KN Pro incorporates:

- Electronic sample-gas cooling
- Electronic condensate monitoring
- Automatic condensate evacuation
- Particulate filtration
- Sensor protection systems

Proper gas conditioning helps maintain measurement stability and protects sensitive analyzer components during extended field testing.

CO Sensor Protection

The analyzer incorporates an automatic high-CO protection system. When excessive CO concentrations are encountered, the analyzer can isolate and purge the CO sensor while continuing the measurement process.

Integrated Printer

A built-in thermal printer allows operators to create an immediate hard-copy record of measurements in the field.

Portable Remote Display

The removable handheld display provides:

- Live measurement display
- Analyzer control

- Data-logging functions
- Menu navigation
- Field operation away from the analyzer case

Depending on analyzer configuration, wireless communication may also be available.

Heated Sample Line

The heated sample line transports exhaust gas from the sampling probe to the analyzer while minimizing condensation within the line. The heated hose is optional, but to maintain the specifications for a compliant MSAPR test, it is required.

This is particularly important when measuring engine exhaust because moisture condensing before the sample reaches the analyzer can affect sample integrity and measurement accuracy.

During operation, the line maintains an elevated temperature along the gas-sampling path.

This helps keep moisture in the vapour phase until the sample reaches the analyzer's conditioning system.

Construction

The hose assembly consists of:

- Heated internal sample tubing
- Thermal insulation
- Protective braided outer covering
- Analyzer-side connections
- Probe-side connection
- Electrical connection for line heating

Available Lengths

Heated sample hoses are commonly available in a 30-foot length, custom lengths are available based on your needs. If running a mobile lab or trailer, 50-foot often works better.

Benefits

- Reduces condensation in the sample line
- Helps maintain representative exhaust-gas samples
- Supports cold-weather field operation
- Reduces the potential for moisture-related measurement errors
- Protects the integrity of NO_x and other emissions measurements

Stainless-Steel Exhaust Sampling Probe

The stainless-steel probe is inserted directly into the engine exhaust stream to collect a representative gas sample.

The probe allows exhaust gas to be collected from an appropriate sampling location within the exhaust stack or pipe and transferred into the heated sample line.

Construction

The probe assembly incorporates:

- Stainless-steel probe tube
- Gas-sampling passage
- Probe mounting/positioning hardware
- Connection to the heated sample line
- Temperature-sensing capability, depending on configuration

Stainless steel provides the heat resistance and corrosion resistance required for industrial exhaust applications.

Features

Depending on the supplied configuration:

- High-temperature stainless-steel construction
- Replaceable or interchangeable probe sections
- Integrated thermocouple
- Adjustable probe cone or mounting collar
- Multiple probe lengths available for different stack configurations

ECOM lists probe pipes with integrated thermocouples in several lengths, including 1-foot, 3-foot, and 5-foot versions.

Exhaust-Gas Temperature Thermocouple

The thermocouple measures exhaust-gas temperature at or near the sampling point.

Temperature is an important operating parameter when assessing engine combustion conditions and confirming that the sample is being collected under appropriate test conditions.

Functions

- Measures exhaust-stack temperature
- Provides real-time temperature information to the analyzer
- Helps operators evaluate engine operating conditions
- Supports measurement documentation and test reporting

The thermocouple is designed for elevated-temperature exhaust environments and is connected directly to the analyzer through its temperature input.

Sampling Probe Handle

The probe handle provides the operator interface between the stainless-steel sampling probe and the sample-line system.

Features

- Ergonomic field handling
- Secure probe connection
- Sample-gas connection
- Thermocouple connection
- High-temperature construction
- Connection to heated sampling hose

Sample-Gas Connections and Umbilical Assembly

The kit includes the required tubing and connection points to create a continuous sampling path:

**Engine Exhaust → Sampling Probe → Heated Sample Line
→ Gas Conditioning System → Analyzer Sensors**

Connections are designed for repeated field installation and removal while maintaining a sealed sample path.

Maintaining leak-free connections is critical because ambient-air intrusion can dilute the exhaust sample and affect measured O₂, CO, NO_x, and other parameters.

Analyzer Gas-Conditioning and Water-Trap System

Before the exhaust sample reaches the measurement sensors, moisture and particulates must be controlled.

The J2KN Pro incorporates sample-conditioning components that can include:

- Gas cooler
- Water trap
- Condensate monitoring
- Automatic condensate drain
- Particulate filter

Benefits

- Protects analyzer sensors
- Helps maintain stable measurements
- Removes condensed moisture
- Reduces particulate contamination
- Supports longer field-testing periods

The manufacturer specifies that proper filter maintenance is required and recommends approved filter media rather than desiccant in the sampling system.

Internal Sample Pump

The analyzer's internal pump draws exhaust gas continuously from the sampling point through the probe and heated line into the analyzer.

The pump maintains sample flow throughout the measurement period so the sensors receive a continuous exhaust-gas sample.

Benefits

- Continuous real-time measurements
- Consistent sample delivery
- Suitable for extended emissions testing
- Integrated into the portable analyzer system

Rugged Portable Carrying Case

The analyzer is installed in a durable field transport case designed to protect the equipment during transportation, storage, and testing.

Features

- Rigid protective construction
- Integrated analyzer mounting
- Organized instrument layout
- Hinged protective lid
- Field-accessible controls and connections
- Space for analyzer components and accessories

The case allows the analyzer to operate while remaining protected and organized at the test site.

Typical Kit Contents

The complete MSAPR Emissions Testing Kit includes:

- ECOM J2KN Pro portable emissions analyzer
- Portable remote display/control unit
- Heated exhaust-gas sample line

- Stainless-steel exhaust sampling probe
- Exhaust-gas temperature thermocouple
- Probe handle/heated probe assembly
- Heated-line power connection
- Sample-gas tubing and connectors
- Integrated gas-conditioning/
water-management system
- Integrated sample pump
- Integrated thermal printer
- Rugged transport/carrying case

Application

This kit is intended for field measurement of emissions from stationary reciprocating engines and can form part of an operator's testing program for Canada's **Multi-Sector Air Pollutants Regulations (MSAPR)**.

Typical applications include:

- MSAPR engine emissions testing
- NO_x measurement
- Combustion-performance assessment
- Engine tuning and troubleshooting
- Pre-compliance testing
- Post-maintenance verification
- Engine emissions trending
- Industrial combustion testing

Disclaimer *Final analyzer configuration, sensor ranges, probe length, sample-line length, included accessories, and measurement capabilities may vary by kit configuration. Contact Intricate Group for the kit specifications and to confirm suitability for your MSAPR testing requirements.*