Introducing K5, the 4th generation of the most popular wearable metabolic system, a breakthrough in the field of exercise physiology and human performance assessment.

K5, the 4th generation of the most popular wearable metabolic system, is the most innovative and versatile device designed for the measurement of metabolic parameters (VO₂, VCO₂, Ventilation, HR, energy expenditure, and more…) either in the field or in laboratory. Almost 30 years and 2000 units sold worldwide have been passed since COSMED introduced the first generation of compact metabolic systems.

The result of such an experience has been carefully implemented in a complete new piece of technology incorporating latest design in terms of mechanics, electronics and software providing researchers, professionals and clinical users new ways to explore human exercise physiology.

**Key features**

K5 reaps the benefits of almost 30 years of experience with metabolic systems with a list of new and unique characteristics that expand the scope of metabolic testing from clinical exercise testing to performance assessment.

**Accuracy and reliability** thanks to the 4th generation opto-electronic reader and turbine and by proven and reliable, highly linear and rapid response O₂ (GFC) and CO₂ (NDIR) sensors.

**IntelliMET™ (Intelligent Metabolic Sampling Technology - US Patent 9581539)** provides the ability to provide both micro-dynamic mixing chamber and breath by breath gas exchange measurements. Users can select between the mixing chamber and the breath by breath mode depending on the protocol type, research field or other factors.

**Wireless connectivity.** K5 offers efficient wireless data transmission (both Standard Bluetooth and Long Range Bluetooth) and seamless integration with other devices (ie wireless wrist-worn pulse oximeter).

**Metabolic cart test mode.** K5 comes standard with USB port and medical grade AC/DC power plug. These features turn the device into a conventional metabolic cart (PC controlled via software).

**Advanced wearability.** The single-body design (battery inside) reduces weight and simplify subject setup and improves ergonomics. The new harness (2 sizes) provides great comfort and freedom of movement during testing. Alternatively the K5 can be mounted on different supports through the integrated tripod mount (1/4"-20 UNC).

**Rugged device designed according to IP54 standard.** All plugs, connectors and caps are protected by seals and are water, moisture and dust resistant. Resistive touch-screen technology allows use either with gloves or wet fingers.

**User-accessible slots.** Users can access easily and replace the O₂ sensor, the Li-ion battery and the SD-card (for extra storage capacity).

**Intuitive device user interface** allows simple navigation and quick access to all commands and features directly on the K5 display. Status bar provides information regarding time, date, battery status, Bluetooth, GPS and notification icons (QC messages, warnings, etc). Possibility to switch between data, graphs, GPS etc. during real time measurements.

User replaceable O₂ sensor and/or battery is an easy operation without any special tools.
**Data Management & Software**

Every K5 comes with the Metabolic Module of OMNIA, the new modular software suite from COSMED with an intuitive and innovative user interface.

Compatible with the entire COSMED product range, OMNIA allows the user to operate complex equipment without requiring long learning paths. OMNIA is compatible with latest Windows OS (Win 10).

- Easy-to-use touch-screen graphic user interface with intuitive workflow and hierarchy.
- Designed to work with both standard PC and tablets.
- Compatible with Windows 7, 8, 8.1, 10 (32 or 64 bit). Mac OS compatibility when installed in Virtual PC OS (Parallels, VMware).
- Multi-language environment - Italian, English, Spanish, French, German, Portuguese, Greek, Dutch, Turkish, Russian, Chinese (Traditional), Chinese (Simplified), Korean, Romanian, Czech, Norwegian.
- SQL Database allowing virtually unlimited records and data safety.
- User access by ID and password protected. Possibility to create roles and users by the built-in “user management” tool.
- Multi-users access rights management (Principal Investigator, Physician, Technician, Administrator…) with event logging.
- Allows easy data and graphs display through either pre-defined Dashboards (9 panel plot, etc.) or user defined templates.

OMNIA offers innovative and intuitive user interface, which is touch-screen and tablet ready.

OMNIA allows printing of fully customisable reports, which may also include interpretation, graphical and tabular data.

Comprehensive interpretation tool with a powerful algorithm automatically elaborating results and providing interpretation text strings including numerical results.

1 More languages coming soon
# Technical Specifications

## Product
- **Standard packaging**: K5 unit, 2 rechargeable Li-ion batteries, dual bay battery charger, medical plug, 3 face masks w/ inspiratory valves (extra-small, small, medium), 2 headgears (M, XS), 2 turbine flowmeters, 1 reader, 1 naio sample line, HR monitor belt, 1 harness (Adult size), rugged Pelican™ carrying case, OMNIA PC software

## IP (Protection Standard)
- **IP54 standard** (Rugged design, weather sealed, waterproof and dust-proof)

## Dimensions
- 174 x 111 x 64 mm (6.8 x 4.4 x 2.5 in)

## Weight
- 750 g (1.7 lb) (900 g including battery)

## Keyboard
- 4 keys waterproof (on/off, Rec, Home/Marker, Check/Back)

## Harness
- Multi-size ergonomic harness, adjustable

## Mounts
- Tripod mount standard 1/4” 20 UNC for mounting on several physical supports

## Measurement Technology

### Gas Exchange (standard)
- Micro Dynamic Mixing Chamber

### Gas Exchange (optional)
- IntelliMET™ Intelligent Dual Metabolic Sampling (Mix Chamber & Breath by breath) US Pat 9581539

### Flowmeter
- Digital Turbine (Ventilation 0-300 l/min; <2% or 50ml/min)

### \(\text{O}_2\)
- GFC (Accuracy 0.1-7 l/min; <3%). User replaceable

### \(\text{CO}_2\)
- Digital NDIR (Accuracy 0.1-7 l/min; <3%)

## Wireless Connectivity
- **Telemetry (standard)**: Bluetooth 2.1 + EDR Class II (Range 10 m line-of-sight)
- **Telemetry (optional)**: Long range Bluetooth 2.1 + EDR Class I (Up to 1000 m line-of-sight)

## Navigation & Motion Sensors
- **GPS**: 10Hz GPS/QZSS receiver - position accuracy 2.5 m, speed accuracy 0.1 m/s
- **Altimeter**: Barometric +GPS offset (altitude and grade)

## Display
- **LCD**: 3.5” LCD Transreflective (240x320) 65K colors - high visibility with LED-backlit TFT
- **Touch-screen**: Resistive technology, allows gloves and wet fingers

## Power
- **Main**: 100-240 AC/DC Adapter, medical grade (complies with IEC 60601-1, class II) for direct power supply and battery charging
- **Battery**: Rechargeable Li-ion 7.2V DC “Smart battery” w/ LCD charge status - 4 hours life and user replaceable
- **Battery Chargers**: 100-240VAC, both integrated and external (2 slots)
- **Backup battery**: Embedded (Li-polymer)
- **Other**: 12V DC vehicle charger adapter (optional)

## CPU & data storage
- **CPU**: 456 MHz w/ 128MB RAM
- **Storage**: 512 MB Flash (data storage and OS), up to 2.048.000 breaths
- **Additional Memory**: SD-HC Card 32GB/Fat32 - internal slot user accessible (for additional data storage/FW upgrade)

## Ports
- **USB**: USB - Device (2.5 KV galvanic-isolated)
- **Heart Rate (AUX)**: Polar® HR receiver, ECG TTL port

## Software
- **OMNIA**: Multi-language, Windows 7, 8, 8.1, 10 (32 or 64 bit) compatible - Touch Screen interface, tablet ready

## Environmental
- **Pressure Sensors**: 2 sensors, integrated barometer (-600 to +5500m) and continuous monitoring of analysers pressure
- **Temp. & Humidity sensors**: 4 sensors Integrated (internal and external)

## Safety & Quality Standards
- MDD (93/42/EEC); FDA 510(k); EN 60601-1 (safety) / EN 60601-1-2 (EMC)