

K5

WEARABLE
METABOLIC
TECHNOLOGY

*"Field ready...
wear it!..."*



Wearable Metabolic System
for both Field and Laboratory Testing



COSMED
The Metabolic Company

“K5 complies with IP54 standard, it has been specifically designed for outdoor use and provides protection against heavy water (rain, sweat) or dust.”

- » Fourth-generation of COSMED's trusted wearable metabolic system
- » IntelliMET™ Technology - patented dynamic mixing chamber
- » Durable IP54-rated design, resistant to water, dust, and moisture
- » Intuitive display for smooth navigation and fast access to key functions
- » Efficient wireless data transfer via standard and long-range Bluetooth
- » ANT+ and BLE certified for integration with sport and fitness sensors
- » Operates with OMNIA software, with an intuitive and streamlined workflow



For nearly three decades, COSMED has led the **evolution of metabolic assessment technology**, starting with the first generation of compact, wearable systems.

Built upon continuous feedback from the world's leading research centers, hospitals, and performance labs, the K5 Metabolic Monitor represents the culmination of over 35 years of expertise, refinement, and field-proven innovation.

As the fourth generation in COSMED's renowned line of metabolic systems, the K5 has established itself as the **gold standard** for portable, high-precision measurement of cardiorespiratory and metabolic parameters.

Designed for versatility, the K5 is trusted by **clinicians, sports scientists**, and **researchers** alike.

Users can select between mixing chamber and breath-by-breath mode to perform accurate, real-time measurement of energy expenditure, VO_2 , VCO_2 , and ventilatory thresholds, whether in the controlled environment of a laboratory or in the unpredictable conditions of outdoor and field testing.

The system's **modular design, wireless** capabilities, and ergonomic portability make it ideal for a wide range of applications, from clinical exercise testing and rehabilitation to elite athletic performance evaluation and academic research. More than just a device, the K5 is a platform

for discovery empowering professionals to **explore the limits of human physiology** with confidence and precision. With its proven reliability and a global footprint of satisfied users, the K5 continues to set the benchmark in wearable metabolic technology.



Main Features

The COSMED K5 is a high-performance wearable metabolic system designed for accurate and versatile gas exchange analysis. It combines advanced technology with practical features to support a wide range of applications, from clinical testing to sports performance and field research.

ACCURACY & RELIABILITY

The K5 is engineered for both precision and ease of use, introducing patented technologies that elevate metabolic measurement standards. At the heart of this innovation is **IntelliMET™** (US Patent 9581539), a dual gas sampling system that allows users to choose between micro-dynamic mixing chamber and breath-by-breath modes, offering flexibility based on protocol or research needs.

Equipped with fast-response, high-accuracy **GFC** (O₂) and **NDIR** (CO₂) sensors, the K5 delivers reliable, linear data across various testing conditions. The O₂ sensor has a 12-month average lifespan and is easily replaceable by the user, minimizing maintenance and downtime.



ROBUST AND FUNCTIONAL DESIGN

Built to withstand demanding conditions, the K5 is **designed according to IP54 standards**, ensuring resistance to water, moisture, and dust.

Durable seals protect all connectors and ports, making the device ideal for both indoor and outdoor use.

Its **lightweight**, single-body construction (just 900g including battery) simplifies setup and enhances portability.

The **3.5" LED-backlit TFT touch-screen LCD** provides clear visibility in all lighting conditions, while the resistive touchscreen allows operation with gloves or wet fingers, ideal for field use.

An integrated standard mount connector at the base adds to the system's versatility, enabling secure attachment to standard supports for activities such as cycling, outdoor testing, or laboratory-based assessments.



User replaceable O₂ sensor and/or battery; an easy operation not requiring special tools



SD-card slot to simplify data sharing without connecting to the PC



COMFORTABLE WEARABILITY

The K5 is designed with a strong focus on **ergonomics** and **ease of use**, making setup quick and intuitive for both operators and test subjects. The device is worn on the back, ensuring optimal balance and minimal interference during movement.

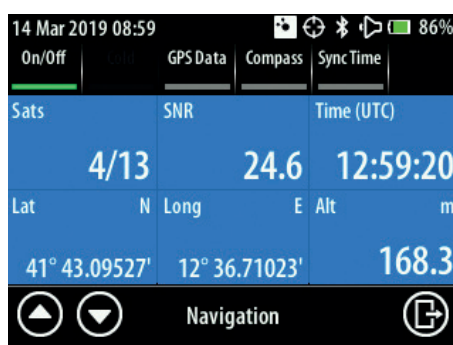
The **two-piece harness system** enhances comfort, especially during dynamic field testing. The rigid outer structure offers adjustable length for a secure fit, while the inner layer is made of breathable, soft material that is detachable and washable, ensuring hygiene and sustained comfort during activities like walking, running, or cycling.



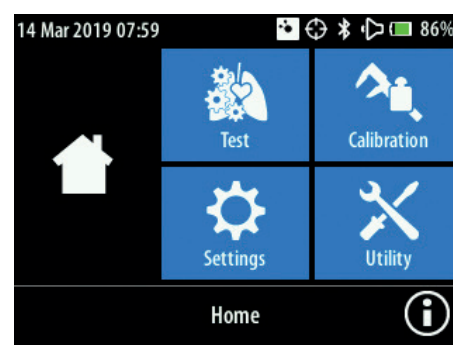
ADVANCED NAVIGATION AND TRACKING

The K5 integrates a high-precision **10Hz GPS/QZSS** receiver for accurate tracking of position and speed, both indoors and outdoors. Coupled with an internal barometric pressure sensor, it delivers reliable altitude and gradient data.

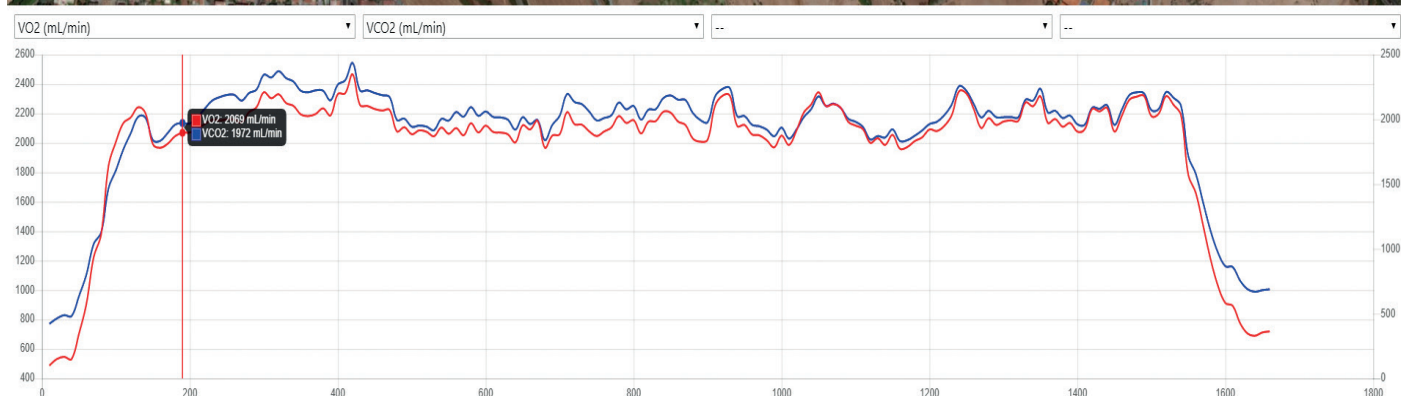
Navigation metrics can be monitored in real time on the device display and exported, together with metabolic parameters, for review in the OMNIA browser or mapping software such as Google Earth.



GPS data can be monitored in real time or downloaded in a dedicated interactive mapping software.



The 3.5" LCD is transfective with backlit TFT for optimal viewing in all lighting conditions



SEAMLESS WIRELESS CONNECTIVITY

The K5 is engineered for efficient **wireless data transmission** and easy integration with a wide range of external devices. It supports remote control and connects effortlessly via **Bluetooth®** to compatible peripherals.

Fully **compatible with ANT+ technology**, the K5 can communicate and synchronize data from multiple monitoring devices into a single source.

It offers standard Bluetooth with a transmission range of approximately 10 meters (line-of-sight), as well as an optional long-range Bluetooth version extending up to 1000 meters.

The built-in ANT+ engine allows **connection to up to 8 devices simultaneously**, supporting 5 profiles including Bike Power & Torque, Bike Speed & Cadence, Heart Rate monitors, Muscle Oxygen monitors, and Stride-Based Speed & Distance sensors¹, ensuring comprehensive data integration for diverse testing needs.

1 More information at:
www.thisisant.com/directory/k5



The real-time GUI of K5 allows users to switch views between different data sets.

Profile	
	Heart Rate (HR)
	Bike Speed (SPD)
	Bike Cadence (CAD)
	Bike Speed & Cadence (S&C)
	Bike Power (PWR)
	Bike Crank Torque Frequency (CTF)
	Foot Speed (SPD)
	Step Count (STP)
	Muscle Oxygen (MO ₂)
	Body Temperature Pulsioximeter (SpO ₂) Heart Rate (HR)



DATA MANAGEMENT & SOFTWARE

Each K5 includes the OMNIA Metabolic Module, part of COSMED's modular OMNIA software suite featuring an intuitive and innovative user interface. OMNIA simplifies operation of complex equipment, minimizing training time with its easy-to-use interface and logical workflow.

The software supports multiple languages and stores data securely in an SQL database, allowing virtually unlimited records. An optional full network solution enables deployment in complex client/server environments. User access is protected by ID and password, with customizable multi-user roles and event logging for security and traceability.

OMNIA offers **flexible data visualization** through pre-defined dashboards or user-defined templates and supports real-time acquisition of Exercise Flow-Volume Loops (EFVL) to assess ventilatory limitations. Powerful post-test editing tools enable filtering, threshold calculations (AT, RCP), VO₂max, EFLV analysis, VE/VCO₂ slope and intercept, and other key parameters.

Its multi-layer interface provides **easy access to multiple views** with simple clicks or touch gestures. A built-in graphical protocol editor allows the design of customized exercise protocols for bikes and treadmills.

OMNIA supports control of a wide range of ergometers, from COSMED's own to many standard and optional third-party devices, ensuring seamless integration for diverse testing setups. The software also features comprehensive **interpretation tools** with automated algorithms that generate detailed results and explanatory text.

PORTS

The K5 features a standard **USB** port for real-time communication with a PC or for data download, allowing the device to function as a conventional metabolic cart when connected and controlled via software.

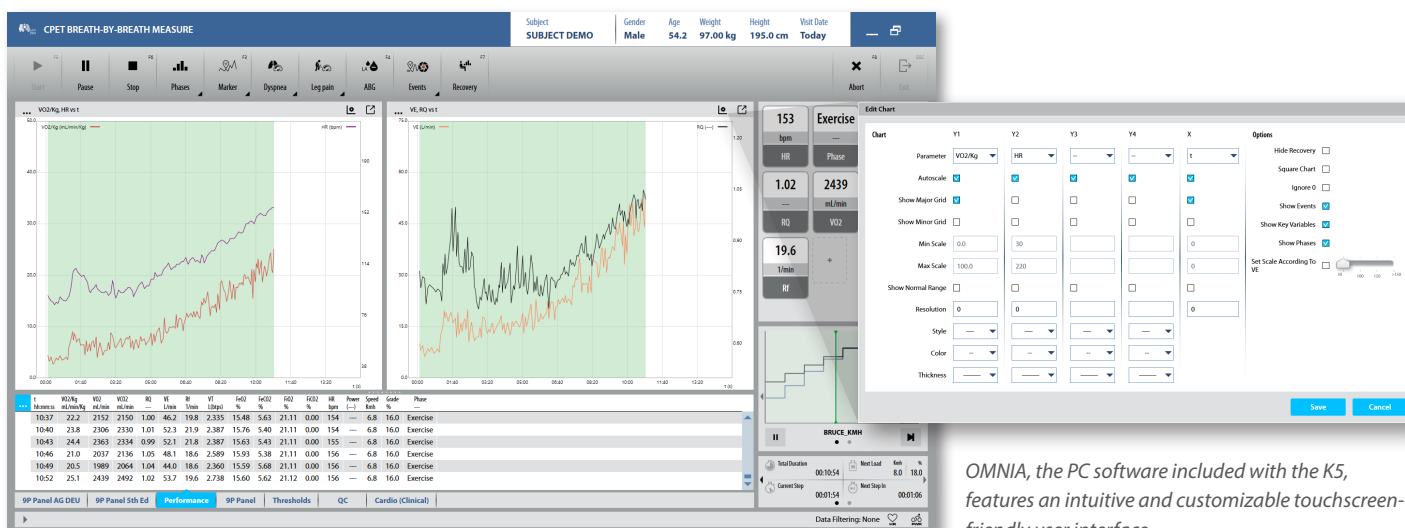
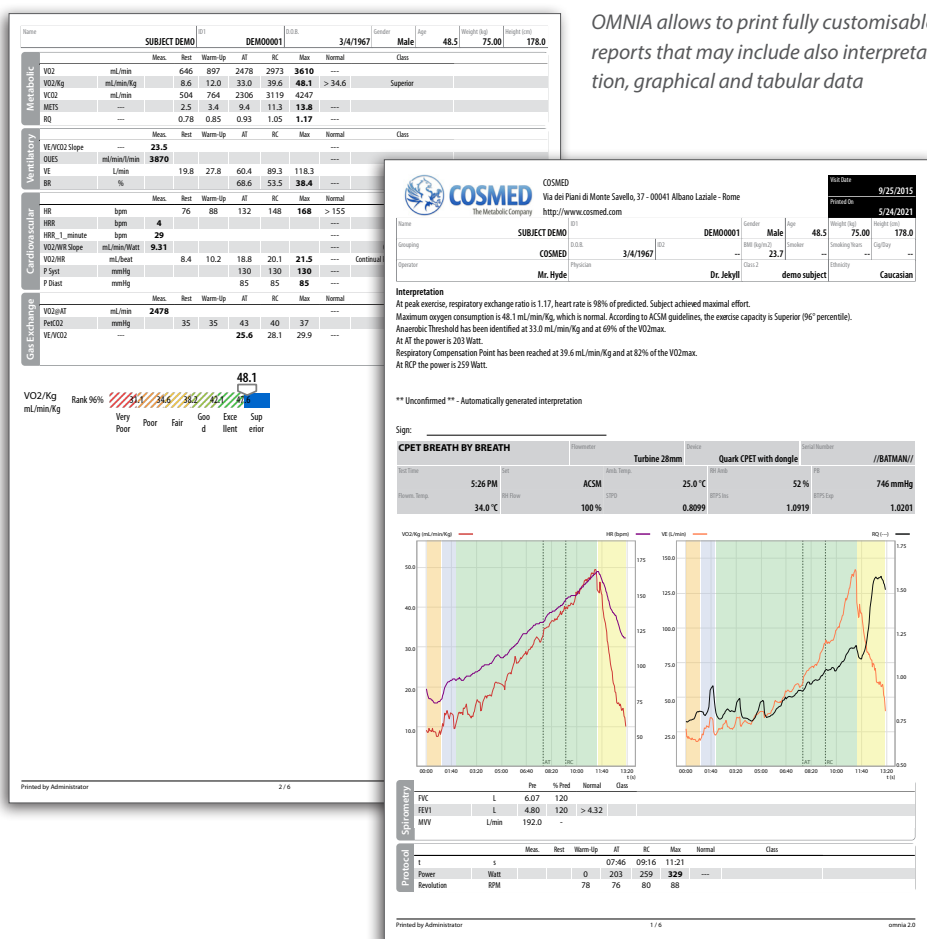
It includes a medical-grade AC/DC power plug with international adapters for direct mains power supply.

Additionally, an auxiliary heart rate (HR Aux) port enables heart rate input from either an ECG (via TTL).

DATA STORAGE

To make data sharing easy without requiring any PC software, the device includes an SD card slot that users can access directly.

OMNIA allows to print fully customisable reports that may include also interpretation, graphical and tabular data



OMNIA, the PC software included with the K5, features an intuitive and customizable touchscreen-friendly user interface.

Options and Accessories

LONG DISTANCE BLUETOOTH

The module extends wireless data transmission range up to 1000 meters (line-of-sight), enabling greater flexibility and freedom during outdoor testing without compromising data accuracy or connectivity.

INTELLIMET™

Offers advanced dual gas sampling technology to switch between micro-dynamic mixing chamber and breath-by-breath measurement modes.

ANT+

Enables seamless wireless integration with a wide range of sport and fitness sensors.

WIRELESS PULSE OXIMETER

Provides continuously monitors oxygen saturation and pulse rate, transmitting data in real time to the K5 without restricting movement.

AQUATRAINER KIT

Enables accurate metabolic testing during water-based activities. Designed for use in aquatic environments, it provides reliable gas exchange measurements while ensuring comfort and safety for the user.

MY NRG APP

My NRG App is a COSMED free app to retrieve data from K5 and store into a personal database and/or sync with HealthKit or Google Fit.

Q-BEAT

1 Lead Bluetooth ECG Belt for measuring and recording single channel ECG.

FACE MASKS

Include inspiratory valves designed to reduce breathing resistance during inhalation. Available in adult sizes: Large, Medium, and Small.

HEADCAP

Securely holds device's turbine in place with a comfortable design for accurate, stable measurements.



CALIBRATION

3L calibration syringe with gas cylinders and regulators.



The K5 includes a rugged, waterproof case with dual compartments to safely separate wet items from electronic components.



The Nonin® WristOx 3150 pulse oximeter provides continuous, accurate SpO₂ and pulse rate monitoring during walking and titration tests.

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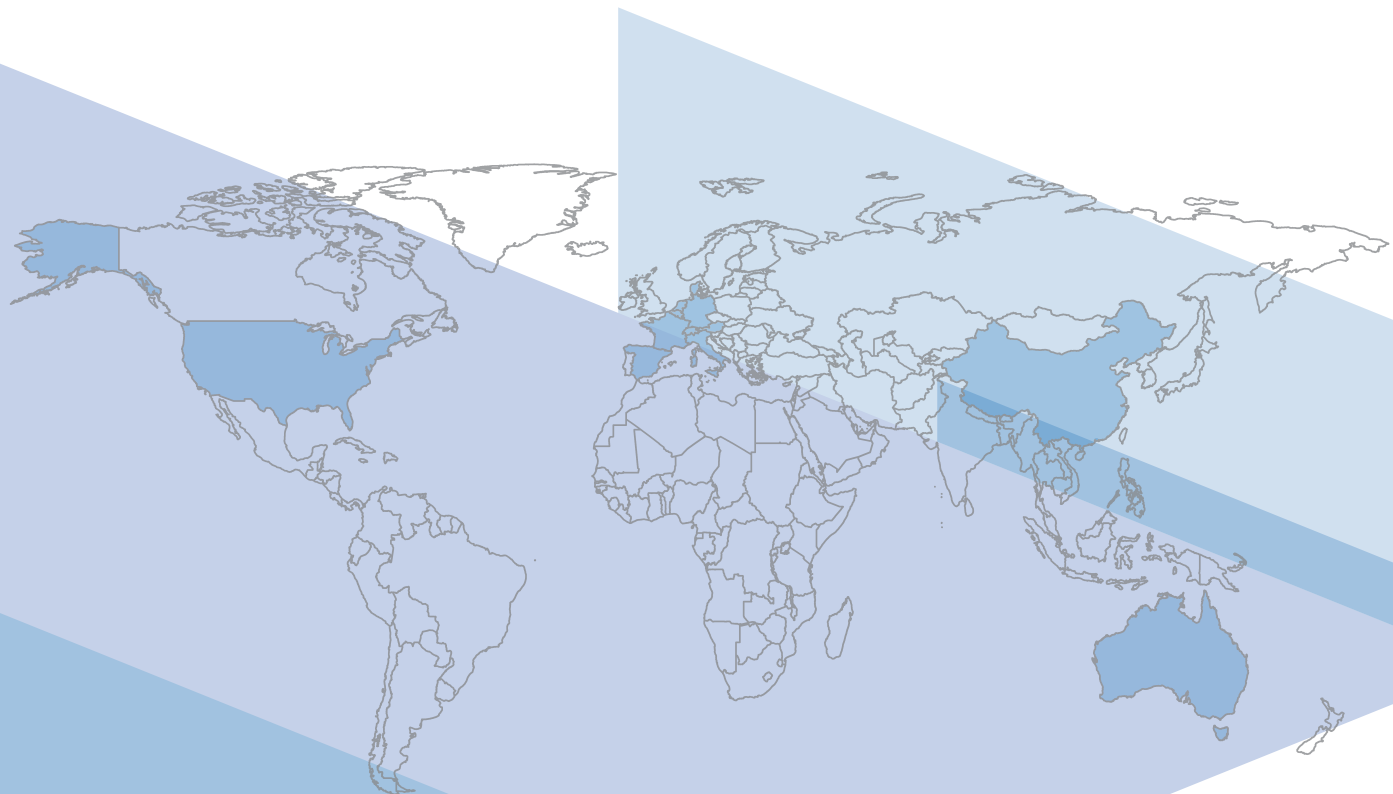
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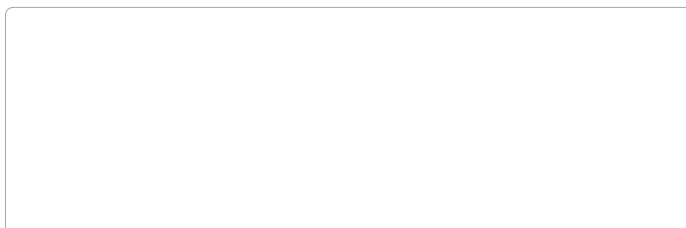
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To know more:



COSMED K5 is a medical device.

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