

# Indirect Calorimetry module



The device is intended for continuous non-invasive monitoring of carbon dioxide (CO<sub>2</sub>) concentration and resting energy expenditure (REE) of ventilated patients.

## Benefits:

- Gold Standard in Metabolic Monitoring — Delivers continuous, non-invasive measurement of Resting Energy Expenditure (REE) and Respiratory Quotient (RQ).
- Precision Nutrition for Critical Care — Enables individualized nutritional therapy—reducing complications like infections, hyperglycemia, and prolonged ventilation.
- Proven Clinical Impact — Reduces ICU length of stay, antibiotic use, and nosocomial infections through optimized calorie delivery
- Ideal for Complex Critical Conditions — trauma, stroke, sepsis, ARDS, and post-surgical recovery with metabolic stability
- High Sensitivity & Fast response — CO<sub>2</sub> resolution to 0.01%, O<sub>2</sub> to 0.1%; Response time 200 ms.

## Technical Specification

Operation principle	Non-dispersive infrared spectrophotometry (NDIR)
External interface	RS-232
Initialization time	Maximum 10 s
Gas sampling rate Admissible absolute deviation	50–250 ml/min ±10 ml/min in absolute terms or ±10% in relative one (the biggest from the values)
CO <sub>2</sub> concentration measurement range (CO <sub>2</sub> partial pressure) Admissible absolute deviation: CO <sub>2</sub> concentration CO <sub>2</sub> partial pressure	0–20 vol.% (resolution 0.01) 0–150 mmHg (resolution 0.01)  ±(0.2 vol.% + 0.02 • Cmeas) ±(1.5 mmHg + 0.02 • Cmeas)
O <sub>2</sub> concentration measurement range Admissible absolute deviation	0–100 vol.% (resolution 0.1) ±(2.5 vol.% + 0.025 • Cmeas)
Calculated REE parameters: O <sub>2</sub> consumption (Vo <sub>2</sub> ) CO <sub>2</sub> elimination (VCO <sub>2</sub> ) Resting energy expenditure (REE) Respiratory quotient (RQ)	10–1000 ml/min 10–1000 ml/min 72–7200 kcal/day 0.5–2
Measurements drift	±(0.2 vol.% + 0.02 • Cmeas) or ±(1.5 mmHg + 0.02 • Cmeas)
Gas mixture parameter measurement accuracy	±(0.43 vol.% + 0.08 • Cmeas)
Response time	Maximum 3 s (at sampling rate 250 ml/min)
Rise time	Maximum 0.2 s (at sampling rate 250 ml/min)
Respiratory rate measurement range Respiratory rate measurement accuracy	3–160 breath per minute (BPM) ±2 breath per minute (BPM)
Power	Voltage: 5.0 V±5% Current: maximum 0.8 A
Weight	0.7 kg
Dimensions	58x92x146 mm
Without housing dimensions / weight	117x44x70mm, 0.25 kg

## Delivery kit

Indirect calorimetry module	TESN.650002	1 pcs.
Interface cable	TESN.704029	1 pcs.
Monitoring line	DRYLINE	1 pcs.
Water trap	DRYLINE II	1 pcs.
Paramagnetic O <sub>2</sub> sensor	Paracube	option
Galvanic O <sub>2</sub> sensor	Envitek	option

## Contacts

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