



Ultima™ Series

Cardiorespiratory Diagnostic Systems



The Ultima™ Series offers maximum flexibility to configure both pulmonary function testing (PFT) and gas-exchange systems. Simply select the product that best meets your needs, or talk to our product sales representative for more info.

TESTING CAPABILITIES	PF/PF RTD	PFX	CPX	CARDIO ₂
PULMONARY FUNCTION TESTS:				
◦ Spirometry (FVC, SVC, MVV)	✓	✓	✓	✓
◦ Respiratory mechanics (MIP/MEP)	✓	✓	-	-
◦ Diffusing capacity	✓	✓	-	-
◦ Nitrogen washout	✓	✓	-	-
◦ Single breath N ₂	✓	✓	-	-
◦ Arterial blood gases (ABG manual entry)	✓	✓	✓	✓
ECG/HEART RATE CONFIGURATIONS:				
◦ Integrated 12-lead ECG	-	-	-	✓
◦ Heart rate TTL interface	-	✓	✓	✓
◦ Heart rate (wireless chest strap)	-	○	○	○
GAS EXCHANGE TESTS:				
◦ Direct fick cardiac output	-	✓	✓	✓
◦ Indirect fick cardiac output (NICO)	-	○	○	○
◦ Exercise capacity (O ₂ and CO ₂)	-	✓	✓	✓
◦ Nutrition assessment: REE/RMR (O ₂ and CO ₂)	-	○	○	○

✓ standard ○ optional



ADVANCED DIGITAL ELECTRONICS

We offer the latest technology and sensors for unparalleled performance and reliability.

- Automated monitor continuously adjusts analyzers.
- Automatic gas calibration saves testing time.
- Interface to wide array of external peripheral devices.

PREVENT® FLOW SENSOR FOR SIMPLICITY AND ACCURACY

Our proprietary design saves time between patients and provides maximum infection control while meeting or exceeding ATS/ERS standards and specifications.

- Eliminates warm-up or recalibration between patients
- Contains no moving parts or electronics for cost-effective testing
- Options to use with a filter, sterilize or discard



EASY-TO-USE BREEZESUITE™ SOFTWARE

Our powerful BreezeSuite software provides simple, one-button testing.

- Ease of use allows operator to focus on patient's effort.
- Timely prompts guide the operator through the entire testing process.
- Powerful Microsoft SQL database provides flexibility in accessing, manipulating and reporting data.
- Automated quality-assurance program notifies operator to ensure results comply with ATS/ERS acceptability criteria.

OPTIONAL BREEZECONNECT™ INTERFACE

- Network capability to connect other cardiorespiratory systems
- Electronic medical record interface using latest HL7 standards with either unidirectional or bidirectional capability
- Flexible access allows physicians to view and interpret patient results from any location on the facility's network

GAS REQUIREMENTS

PF WITH RTD MULTIGAS TECHNOLOGY

- Calibration gas: 5% CO₂, 12% O₂, bal N₂ (6-8 psi)
- DL_{CO} mix (135 psi) 0.3% CO, 0.3% CH₄, 21% O₂, bal N₂
- 100% O₂ (135 psi)

PF/PFX WITH GAS CHROMATOGRAPHY

- Calibration gas: 5% CO₂, 12% O₂, bal N₂ (6-8 psi)
- Reference gas (recommended): 21% O₂, bal N₂ (6-8 psi)
- DL_{CO} mix (135 psi): 0.3% CO, 0.5% Ne, 21% O₂, bal N₂
- 100% O₂ (135 psi)
- 100% He (10-28 psi)

CARDIO₂/CPX

- Calibration gas: 5% CO₂, 12% O₂, bal N₂ (6-8 psi)
- Reference gas (recommended): 21% O₂, bal N₂ (6-8 psi)

SPECIFICATIONS

ULTIMA MODULE

- H x W x D: 14 x 13 x 14 in (35.5 x 33 x 35.5 cm)
- Weight: 26.5 lbs (12 kg)

PATIENT INTERFACE ADJUSTMENT (PF ARM)

- Vertical extension: 17 in (43 cm)
- Horizontal extension: 14 in (35.5 cm)
- Radius: 180°

PREVENT® FLOW SENSOR

- Bidirectional Pitot tube flow sensor
- Range: ±18 L/s
- Accuracy: ±3% or 50 mL, whichever is greater
- Resistance: <1.5 cm H₂O @ 14 L/s
- Dead space: 39 mL

POWER REQUIREMENTS

- 100-240 V/50-60 Hz

O₂ ANALYSIS

- Type: Galvanic
- Range: 0-100%
- Response: (10-90%) <130 ms
- Accuracy: ±0.03%

CO₂ ANALYSIS

- Type: Non-dispersive infrared (NDIR)
- Range: 0-15%
- Response: (10-90%) <130 ms
- Accuracy: ±0.1%

DIFFUSION ANALYSIS: RTD MultiGas Technology

- Analysis time: <1 sec
- Range: CO, 0-0.35%; CH₄, 0-0.35%
- Accuracy: CO, ±0.003%; CH₄, ±0.003%
- Linearity: <1% full scale
- Resolution: CO, 0.0005%; CH₄, 0.0005%

GAS CHROMATOGRAPHY

- Analysis time: <120 sec
- Range: Ne, 0-0.5%; CO, 0-0.3%
- Accuracy: 0.03 units full scale or 0.03%
- Linearity: 0.5% full scale

GAS SAMPLE

- Proprietary gas-drying sample circuit



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