

TCM CombiM Specifications

Hardware

Computer specifications

CPU: AMD ETX LX800, 500 MHz (Pentium Class)
 RAM: 128 MB
 Software platform: Windows CE 5.0
 Startup time: max. 1 min

Operating conditions

Operating environment: 12-28 °C/54-82 °F
 Built-in barometer:
 Range: 375-825 mmHg or 50-110 kPa
 Accuracy: ±5 mmHg or 0.67 kPa
 Altitude: 2290 m/7513 ft above sea level
 Power: 100-240 V, 50-60 Hz, 70 VA (max.)
 Built-in battery: rechargeable Pb battery
 Typical operating time: 1 hour per charge at 25 °C

Software

Measuring range

Transcutaneous carbon dioxide tension/ $tc\text{pCO}_2$:
 5-200 mmHg or 0.7-26.7 kPa
 Transcutaneous oxygen tension/ $tc\text{pO}_2$:
 0-800 mmHg or 0.0-99.9 kPa
 Sensor heating power: 0-1000mW

Calibration

Automatic calibration
 1-point, 7.5% CO_2 and 20.9% O_2 , balanced N_2
 Integrated calibration chamber

Patient data storage

Up to 48 hours of measuring data in 2-sec data intervals
 Reviewing trends on screen
 Download of stored patient data to PC, printer or memory stick

Dimensions

TCM CombiM monitor

Width	30.8 cm	12.1 in
Depth	23 cm	8.7 in
Height	16 cm	6.3 in
Weight	4 kg	8.8 lbs

Display

Screen: 6½" color touch TFT, full VGA (640 x 480)
 Display options: normal view (numeric), trend table, trend curve
 Display update period: every 2 seconds

Interface connections

Serial output: EIA232 (RS232)
 Analog output: 0-1000 mV
 Printer output: USB 2.0 (compliant with USB 1.1)
 Printer protocol: HP PCL3
 Data protocol: VueLink (Philips), Monlink (Spacelabs and Nihon Kohden)

Site timer

Indication of remaining measuring time
 Measuring time elapsed: clock triggers an alarm and sensor temperature is off

Alarm level

Alarm sound: high 83 dBA, low 65 dBA
 Alert tone: high 73, low 58 dBA

Languages

English, German, Danish, French, Spanish, Portuguese, Russian, Italian, Dutch, Swedish and Japanese

$tc\text{pO}_2$ / $tc\text{pCO}_2$ module

Width	14.5 cm	5.7 in
Depth	14.8 cm	5.8 in
Height	10.7 cm	4.2 in
Weight	0.575 kg	1.3 lbs

tc Sensor 54 and tc Sensor 84

Sensor specifications

Measuring principle

tc Sensor 54: Stow-Severinghaus-type $p\text{CO}_2$ sensor
tc Sensor 84: Stow-Severinghaus-type $p\text{CO}_2$ combined with Clark-type $p\text{O}_2$ sensor

Sensor temperature

Selectable between 37.0-44.0 °C in steps of 0.5 °C
Reliable safe control by two independent circuits
Accuracy: ± 0.2 °C
Automatic temperature off when site time is elapsed

Sensor performance (in vitro)

tc Sensor 54

Conditions: sensor temperature of 42.0 °C, calibration interval: 12 h

tcpCO₂:

Response time (10-90%): ≤ 60 sec

Drift: $\leq 0.5\%/h$

Linearity: at 1 and 10% CO₂: better than 1 mmHg or 0.13 kPa
at 33% CO₂: better than 3 mmHg or 0.67 kPa

Sensor remembraning requirements

Two weeks
Built-in alert when sensor needs remembraning
Protected membrane

Sensor memory

Sensor has a built-in memory for calibration values, remembraning date and other sensor data

Interference by anesthetic gases (in vitro)

tcpCO₂: negligible
tcpO₂: 75% N₂O: <10mmHg or 1.33 kPa
2% Halothane: approx. 200 mmHg or 26.67 kPa
2% Enflurane and 2% Isoflurane: negligible

Accessories

905-868 membraning kit 54	For tc Sensor 54 only:
905-871 membraning kit 84	5601300 sensor attachment clips
905-873 fixation kit N20	5601500 fixation rings N32
905-872 adhesive rings N20 kit	

Sensor dimensions

Diameter: 15 mm or 0.3 in
Height: 8 mm or 0.6 in
Weight: 3 g or 0.1 oz
Sensor cable length: 3 m or 9.8 ft, shielded, flexible, polyurethane coated

Biocompatibility

All materials are latex-free

Compliance

Patient safety The instruments comply with IEC 60601-1:1993, IEC 60601-1-2:2001, IEC 60601-2-23:1999, IEC 60601-3-1:1996, IEC 60601-1-8:2006, ISO 9919:2005
The following test house has approved the instrument: CSA in Canada according to CAN/CSA-C22.2 No. 601.1-M90, 601.1S1-94, 601.1B-98, 601.2.23-98 and UL std. No. 60601-1.

Type BF equipment (body floating)



This product complies with the requirements of the Medical Device Directive 93/42/EEC June 1993

EMC Compliance with requirements EMC is ensured by fulfilling the requirements of the standards IEC 60601-1-2:2001, IEC 60601-2-23:1999.

Performance This product complies with the IEC 60601-2-23:1999, IEC 60601-3-1:1996.

Contact us

Radiometer is represented in more than 100 countries.
For the local Radiometer representative nearest you, please go to www.radiometer.com.

Data subject to change without notice.

Radiometer, the Radiometer logo, ABL, AQT, TCM, RADIANCE, PICO and CLINITUBES are trademarks of Radiometer Medical ApS.