



CETUS xl Advanced Patient Monitor

Features

- 15.6" or 19" switchable TFT LCD Touch Screen
- Aluminium material shell
- Fanless design suitable for quiet care environment
- 10 waveform display, up to 12-lead ECG analysis
- Useful calculation (Hemodynamic, Drug Dose, Oxygenation, Ventilation)
- SpO2 support PVI and PI, low perfusion 0.2%
- Aspect BISx module, NMT module optional
- Wired/Wireless CMS, support HL7 protocol to HIS
- SpO2 pulse-tone modulation (Pitch Tone)
- VGA support external display
- Graphical & tabular trend review (120 hours)
- 48 h full disclosure wave review for each patient



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Multiple parameter options satisfy the needs of ICU, CCU, NICU

Configuration: ECG, SpO2, NIBP, Resp, PR; Li-ion battery

Optional: 12-lead ECG, Masimo SpO2, 2/4/6 IBP, C.O., EtCO2, Multi-gas, BIS, NMT;
VGA, Thermal Recorder, Wired/Wireless CMS



Masimo SET® SpO2

Provides anti-motion and anti-low perfusion SpO2 measurement.



Bispectral Index™ by Aspect

Monitor the level of consciousness of the patient under general anesthesia or sedation. provides BIS, SQI, EMG, SR, SEF, TP, PC value and EEG wave.



Masimo Phasein IRMA™/ISA

Sidestream/Mainstream EtCO2
Allows selection of the modality best suited to the application, monitoring with infrared absorption technique.



NMT

Stimod NMS450X – Objective TOF neuromuscular monitoring of muscle relaxants during general anaesthesia



IBP

2-4 Channel, support IBP waveform overlapping display



C.O.

Cardiac Output

Technical Specifications

Display

15.6" TFT Touch screen

Resolution: 1366 x 768

Number of traces: 10 waveforms

I/O

LAN: 1 standard RJ45 port

WLAN: IEEE 802.11b/g/n

USB: 2 USB connectors

SD: 1 SD card socket

VGA: 1 VGA monitor connector

Output: 1 connector for Nurse call,

Defib Sync Analog Output

ECG

Lead type: 3-lead, 5-lead, 12-lead

ECG waveform: 2 channels, 7 channels, 12 channels

Display sensitivity: 2.5 mm/mV (×0.25), 5 mm/mV (×0.5), 10 mm/mV (×1.0), 20 mm/mV (×2.0)

Wave sweep speed: 6.25mm/s, 12.5 mm/s, 25 mm/s, 50 mm/s

Bandwidth

Diagnostic mode: 0.05 Hz~100 Hz

Monitor mode: 0.5 Hz~40 Hz

Surgery mode: 1 Hz~20 Hz

Strong filter mode: 5Hz~20 Hz

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Technical Specifications

CMRR>100dB

Notch: 50/60Hz notch filter can be set to on or off

Differential input impedance >5 MΩ

Electrode polarization voltage range: ±400 mV

Baseline recovery time <3s after defibrillation (in monitor and surgery mode)

Calibration signal: 1 mV (peak - peak), accuracy ±3%

RESP

Measurement method: Thoracic electrical bioimpedance

Rate: 0 – 150 bpm

Measuring lead: Lead I, II

Wave gain: ×0.25, ×0.5, ×1, ×2

Respiratory impedance range: 0.5-5 Ω

Baseline impedance: 500-4000 Ω

Gain: 10 grades

Scan speed: 6.25 mm/s, 12.5 mm/s, 25 mm/s

TEMP

Accuracy: ±0.1 °C or ±0.2 °F (without probe)

Measurement range: 5~50 °C (41~122 °F)

Channel: Two channels

Resolution: 0.1 °C

Parameters: T1, T2 and TD

SpO2

Measurement range: 0-100%

Resolution: 1%

Accuracy: ±2% (70-100%, Adult/Pediatric);
±3% (70-100%, Neonate);
0-69%, unspecified

Refreshing Rate: 1s

Masimo SET® SpO2(Optional)

Measurement range: 0-100%

Resolution: 1%

Accuracy: ±2% (70-100%, Adult/Pediatric, non-motion, low perfusion);
±3% (70-100%, Neonate, non-motion);
±3% (70-100%, motion);
0-69%, unspecified

Refreshing Rate: 1s

Pulse Rate

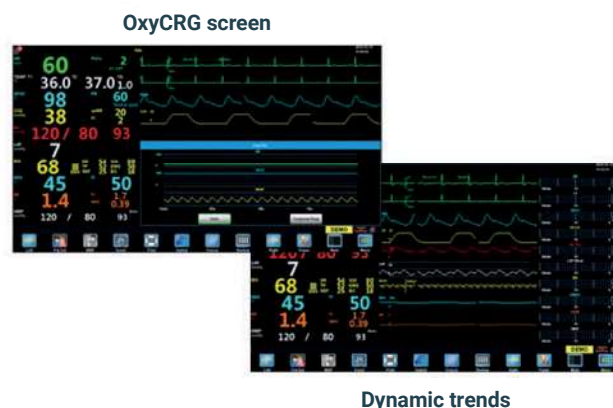
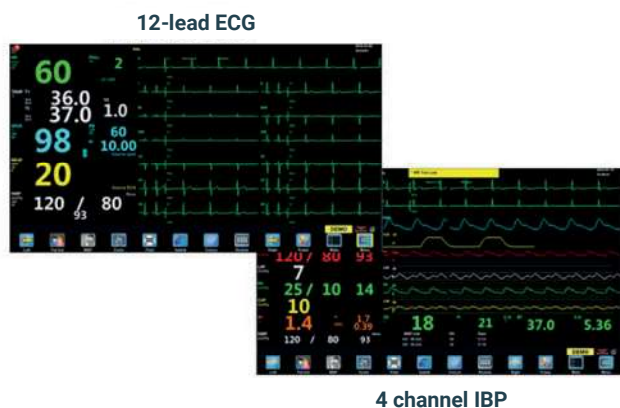
Range: 30~254 bpm

Resolution: 1bpm

Accuracy: ±2bpm (non-motion)
±5bpm (motion)

Refreshing rate: 1s





NIBP

Measurement method: Automatic oscillometric method

Operating mode: Manual, automatic, continuous

Measurement unit: mmHg/kPa selectable

Typical measurement time: 20~40s

Measurement type: Systolic, Diastolic, Mean

Measurement range (mmHg)

Range of Systolic pressure:	Adult	40-270
	Pediatric	40-200
	Neonatal	40-135

Range of Diastolic pressure:	Adult	10-210
	Pediatric	10-150
	Neonatal	10-95

Range of Mean pressure:	Adult	20-230
	Pediatric	20-165
	Neonatal	20-105

Measurement accuracy

Maximum average error: ± 5 mmHg

Maximum standard deviation: 8 mmHg

Resolution: 1 mmHg

Interval: 1, 2, 3, 4, 5, 10, 15, 30, 60, 90, 120, 180, 240, 480 minutes

Overpressure protection: Software and hardware, double safety protection

Cuff pressure range: 0-280mmHg

IBP (Optional)

Channel: 2, 4 or 6-channel

ART: 0 to 300 mmHg

PA: -6 to 120 mmHg

CVP/RAP/LAP/ICP: -10 to 40 mmHg

Measurement range: P1/P2 -50 to 300 mmHg

Resolution: 1 mmHg

Accuracy: $\pm 2\%$ or ± 1 mmHg, whichever is greater (without sensor)

Sensitivity: 5uV/mmHg/V

Impedance range: 300 to 3000 Ω

C.O. (Optional)

Method: Thermodilution

Range: C.O.: 0.2 to 20 L/min

TB: 23 to 45 $^{\circ}\text{C}$

T1: -1 to 27 $^{\circ}\text{C}$

Accuracy: C.O.: $\pm 5\%$ or $\pm 0.1\text{L/min}$, whichever is greater TB, T1: $\pm 0.5^{\circ}\text{C}$ (without sensor)

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Technical Specifications

Standard Mainstream CO₂ (Optional)

Measurement range: 0-19.7%,
150 mmHg, or 0-20kPa
Resolution: 0.1 mmHg
Measurement accuracy
 0 - 40 mmHg: ± 2 mmHg
 41 - 70 mmHg: $\pm 5\%$ of reading
 71 - 100 mmHg: $\pm 8\%$ of reading
 101 - 150 mmHg: $\pm 10\%$ of reading
Respiration rate: 3-150 bpm
Respiration rate accuracy: $1\% \pm 1$ bpm
Warm-up time: 97% within 8s, full accuracy within 20s

Standard Sidestream CO₂ (Optional)

Measurement range: 0-20% (0-150 mmHg)
Accuracy: < 5.0% CO₂: ± 2 mmHg
 > 5.0% CO₂: < 6% of reading
Respiration rate: 2~150 BPM
Respiration rate accuracy: $1\% \pm 1$ BPM
Warm-up time: 97% within 45s, full accuracy within 10 min
Rise times (t_{10-90%}): About 100 ms, when flow is 100 ml/min, adult water trap & 1.5m sampling tube
Delay time: <3sec when flow is 100 ml/min, adult water trap & 1.5 m sampling tube

Recorder (Optional)

Built-in, Thermal dot array
Horizontal resolution: 16 dots/mm (25 mm/s paper speed)
Vertical resolution: 8 dots/mm
Paper speed: 25 mm/s, 50 mm/s
Number of waveform channels: 3

Phasein ISA Sidestream CO₂ (Optional)

Warm-up time: Full accuracy within 10 seconds
Sampling flow rate: 50ml/min(+/-10/min)
Measurement Range: 0 -25%
Accuracy: 0~15% ($\pm 0.2\%$ of the reading)
 15~25%, unspecified
Rise time: 200 ms, typical at 50 ml/min flow rate
Total response time: within 3 seconds (with 2 m Nomoline sampling line)
AWRR Range: 0-150 bpm
AWRR Accuracy: ± 1 breath

Phasein IRMA™ Mainstream CO₂ (Optional)

Measurement Range: 0 -25%
Accuracy: 0~15% ($\pm 0.2\%$ of the reading)
 15~25%, unspecified
Warm-up time: Full accuracy within 10 seconds
AWRR Range: 0-150 bpm
AWRR Accuracy: ± 1 breath

Phasein IRMA™ AX+ Mainstream Multi-gas (Optional)

Gas: CO₂, N₂O, HAL, ISO, ENF, SEV, DES with automatic identification
Warm-up time: Full accuracy within 20 seconds for IRMA AX+
CO₂ Accuracy:
 0-10%: $\pm (0.2\% + 2\%$ of the reading)
 0-15%: $\pm (0.3\% + 2\%$ of the reading)
N₂O Accuracy:
 0-100%: $\pm (2\% + 2\%$ of the reading)
HAL, ISO, ENF:
 0-8%: $\pm (0.15\% + 5\%$ of the reading)



Vivid visualized icons ... Engineered for the most impressive operation

SEV:0-10%: $\pm (0.15\%+5\% \text{ of the reading})$
 DES:0-22%: $\pm (0.15\%+5\% \text{ of the reading})$
 Agent identification time: <20s(typical <10s)
 AWRR range: 0-150 bpm
 AWRR accuracy: ± 1 bpm
 Apnea time: 20~60s

Aspect BISx module (Optional)

Parameter Measurement:
 BC: 0~30 (Only limited to the combined use of an external sensor with a BIS module)
 EMG: 30~55dB (bar chart) with intensity between 30dB and 80dB (tendency chart)
 BIS: 0~100
 SQI: 0%~100%
 SR: 0%~100%
 SEF: 0.5 Hz~30Hz
 TP:40~100 Db
 EEG Measurement: Input impedance $>5 \text{ M}\Omega$
 Noise (RTI) $<2\mu\text{V}$ (0.25~50 Hz)
 Input signal range: $\pm 1 \text{ Mv}$
 EEG bandwidth between: 0.25 Hz~110 Hz

NMT Stimpod NMS 450X (Optional)

Nerve Locating: 0.0 – 5.0 mA
 Nerve Mapping: 0 – 20 mA
 NMT Monitoring: 0 – 80 mA

Load Impedance

Nerve Locating: 0 – 20 k Ω (100 V)
 Nerve Mapping: 0 – 20 k Ω (400 V)
 NMT Monitoring: 0 – 5 k Ω (400 V)

Stimulating Modes

Train-of-Four (TOF)
 Double Burst (DB)
 Post-Tetanic-Count (PTC)
 Supra Maximal Current (SMC)
 Tetanus (TET)
 Twitch (1Hz, 2Hz, 5Hz)
 Auto (Changes automatically depending on the depth of the block)

Operation Environment

Power: AC 100-250 V, 50/60 Hz
 Temperature: 5-40 °C
 Humidity: <80%
 Patient Range: Adult, Pediatric, Neonate
 Battery backup: Standard 2-3 hrs (2.600 mAh), optional 3-5 hrs (4.800 mAh)



Patient Monitoring Solutions

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