

# ***STERNMED***<sup>®</sup>



## **Macs 20**

Multi parameter patient monitor

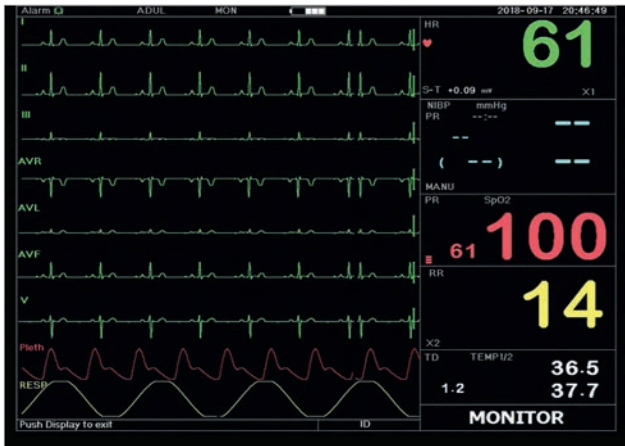




## Macs 20

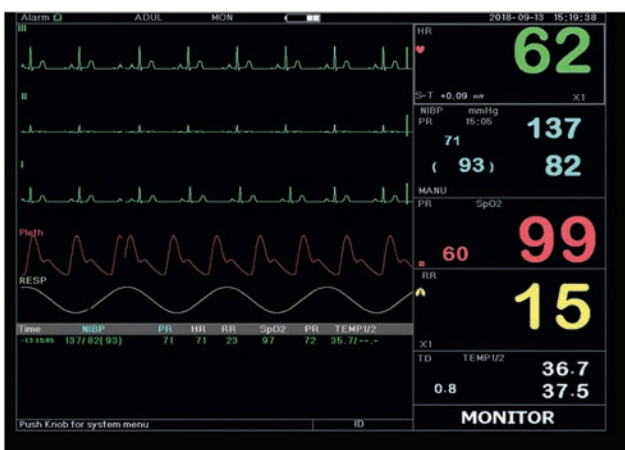
Multi parameter patient monitor

The Macs 20 delivers monitoring capacity and functionalities in an intuitive way, matching the pace and unique needs of adult, pediatric, and neonatal intensive care, anesthesia, pre-operative care, and cardiac care environments.



## FEATURES

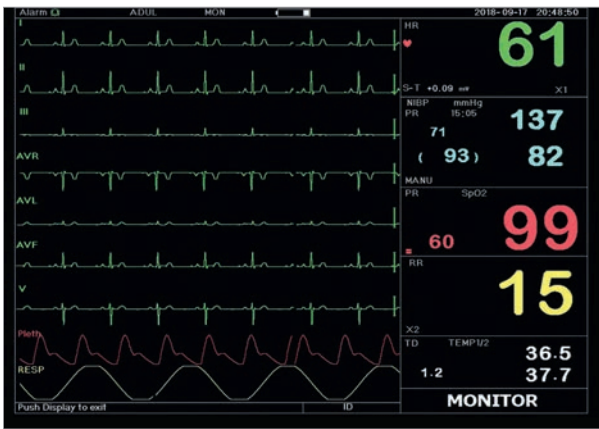
- 12.1" high resolution color TFT display with up to 5 or 9 traces
- 7-channel ECG waveforms display simultaneously
- Easy operation and navigation through rotary knob
- Standard parameters: ECG, RESP, SpO2, NIBP, PR and 2-ch Temp
- 20 arrhythmia waveforms analysis & ST segment analysis (automatic or manual)
- Up to 2000 groups of parameter data & up to 140 hours of ECG waveform storage and recall
- Up to 2000 hours of trend data
- Protection against interference from defibrillator and electrosurgical generator
- Adult/Pediatric/Neonatal measurement modes
- Compact flash back-up protects your patients' data in case of a sudden power outage
- Visual and audible alarms
- Networking capability
- Rechargeable battery
- Touch Screen





## OPTIONS

- Built-In thermal printer
- 2-channel IBP
- Slide stream CO<sub>2</sub>
- Main stream CO<sub>2</sub>
- Nellcor compatible SpO<sub>2</sub>
- NIBP Neonate cuff
- SpO<sub>2</sub> Neonate Sensor
- NIBP Pediatric cuff
- SpO<sub>2</sub> Pediatric Sensor
- Rectal Temperature probe
- Monitor Trolley
- Respiroic EtCO<sub>2</sub>
- Wall mounting rack





## TECHNICAL SPECIFICATIONS

### Macs 20 | SternMed Multi parameter patient monitor

#### ECG MEASUREMENT

Frequency response	Monitoring mode: 0.5 ~ 40 Hz (+0.4 dB) ( -3.0 dB) Diagnosis mode: 0.05 ~ 75 Hz (+0.4 dB) ( -3.0 dB)
CMRR	≥ 90 dB (diagnostic mode)   ≥ 105 dB (monitor mode)
Heart Rate	Range: 15 ~ 350 bpm Accuracy: ± 1% or ± 2 bpm, whichever is greater
ECG Gain	AUTO, Automatic scaled waveform (accuracy ± 5%), 2.5 mm/mV (×0.25), 5 mm/mV (×0.5), 10 mm/mV (×1), 20 mm/mV (×2), 40 mm/mV (×4)
ECG Sweeping Speed	6.25 mm/s, 12.5 mm/s, 25 mm/s, 50 mm/s ± 10%
ECG noise level	< 30 μ Vp-p
ECG input loop current	≤ 0.1 μA
Differential input impedance	≥ 5 MΩ

#### NIBP

Measurement Method	Intelligent oscillometric method
Parameters	Systolic, diastolic & mean pressure
Working Modes	Manual, automatic, STAT (continuously 5 min. NIBP measurement) & user customizable intervals
Pneumatic Pressure Range	0 ~ 300 mmHg
Cuff Type	Adult (standard) & child / neonate (optional)
Average Measurement Time	< 90 sec.
Inflation Time	< 10 sec. (typical adult cuff)
Deflation Time	< 2 sec. (typical adult cuff)
Initial cuff inflation pressure	Adult: < 180 mmHg   Pediatric: < 120 mmHg   Neonate: < 90 mmHg
Monitoring Range (OPL stands for Overpressure Protection Limit)	
Adult (OPL 300mmHg)	Systolic 40 ~ 275 mmHg   Mean 20 ~ 230 mmHg   Diastolic 10 ~ 210 mmHg
Child (OPL 240mmHg)	Systolic 40 ~ 200 mmHg   Mean 20 ~ 165 mmHg   Diastolic 10 ~ 150 mmHg
Neonate (OPL 150mmHg)	Systolic 40 ~ 135 mmHg   Mean 20 ~ 110 mmHg   Diastolic 10 ~ 95 mmHg
NIBP Accuracy	Maximum mean error ± 5 mmHg Maximum standard deviation 8 mmHg

#### RESP

Measurement	Method: Thoracic impedance   Range: 0 ~ 120 rpm
Accuracy	± 2 rpm or ± 5%, whichever is greater
Alarm Limit Range	0 ~ 120 bpm
Alarm Tolerance	± 2 rpm or ± 5%

#### TEMP

Range	25.0 ~ 45.0 °C
Accuracy	± 0.2 °C
Responding Time	≤ 150 sec
Unit	°F/°C

#### SPO<sub>2</sub>

Transducer	Dual-wavelength LED
Wavelength	Red: 660 nm, Infrared: 905 nm
Max. Optical Output Power	Less than 2 mW Maximum average
SpO <sub>2</sub> Measuring Range	35 ~ 100%
SpO <sub>2</sub> measuring accuracy	± 2% (70 ~ 100) (RMS of difference)
Low perfusion capability	0.4 ~ 5%

#### PR

Pulse rate measuring range	30 bpm ~ 240 bpm
Accuracy of pulse rate	± 2% or ± 2 bpm, whichever is greater

#### GENERAL SPECIFICATIONS

Power supply	100 ~ 250 VAC, 50/60 Hz
Display mode	12" TFT color LCD
Alarming mode	Audible & visible alarm
Communication	Ethernet port
Battery	Rechargeable Li-Ion battery
Data recording	Build-in thermal printer (optional)

#### CLASSIFICATION

Safety standard	IEC 60601-1
Type of protection against electric shock	Type BF, CF applied parts
Degree of protection against electric shock	Class I equipment
Electro-magnetic compatibility	Group I, Class B



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