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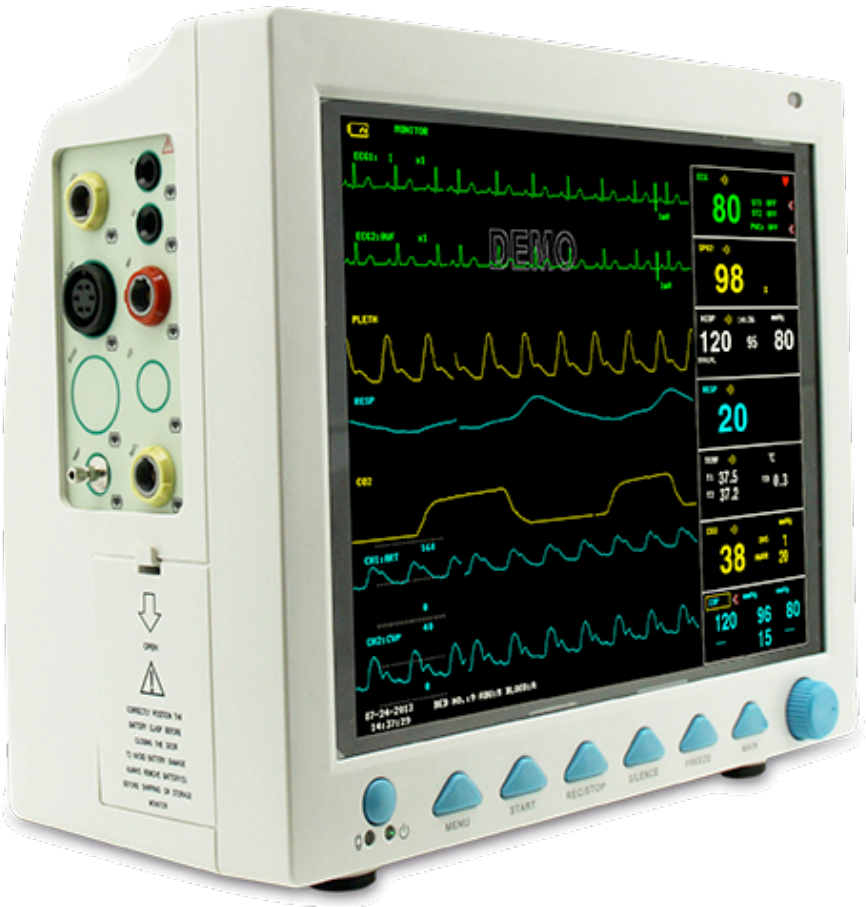
CMS 8000

Multi-Parameter Monitor



Product Specification

1 Classification

Anti-electroshock type	Class I equipment and internal powered equipment
Anti-electroshock degree	ECG(RESP), SpO_2, NIBP, IBP,TEMP,CO_2 CF
Harmful liquid proof degree	Ordinary equipment (sealed equipment without liquid proof)
Disinfection/sterilizing method	Refer to Chapter 11 ~ Chapter 16 for details.
Working system	Continuous running equipment

2 Specifications

2.1 Size and Weight

Size	Monitor	314 x 145 x 264 mm
Weight	Monitor	3.8 kg

2.2 Environment

Temperature		
	Working	5 ~ 40 °C
	Transport and Storage	-40 ~+ 55 °C
Humidity		
	Working	30%～75%
	Transport and Storage	≤95 %(no condensation)
Altitude		
	Working	-500 to 4,600m
	Transport and Storage	-500 to 13,100m
Power Supply		
		100~240VAC, 50/60 Hz,
		Pmax=150VA
		FUSE T1.6A

2.3 Display

Device	
	12.1 in. Color TFT, 3 LED
	Resolution:800*600
Messages	
	8 Waveforms Maximum
	1 Alarm LED (Yellow/Red)
	1 Power LED (Green)
	1 Battery Charge LED (Yellow)
	3 Sound Mode corresponding Alarm Mode

2.4 Battery

Rechargeable 3.7 A/Hr 7.4V Li battery
Operating time under the normal use and full charge greater than 90 minutes
Operating time after the first alarm of low battery will be about 5 minutes

2.5 Recorder (Option)

Record Width	48 mm
Paper Speed	25/50 mm/S
Trace	2
Recording types:	
	Continuous real-time recording
	8 second real-time recording
	Auto 8 second recording
	Parameter alarm recording
	Waveform freeze recording
	Trend graph/table recording
	ARR events review recording
	Alarm event review recording
	NIBP review recording
	Drug Calculation and titration table recording

2.6 Recall

Trend Recall

Short	1 hrs, 1 Second Resolution
Long	480 hrs, 1 Min. Resolution

Alarm Event Recall

71 alarm events of all parameters and 8/16/32seconds of corresponding waveform.

NIBP Measurement Recall

At least 2400 NIBP measurement data.

SD card

72 hrs ECG waveform
TREND review

2.7 ECG

Lead Mode	5 Leads (R, L, F, N, C or RA, LA, LL, RL, V)
Lead selection	I, II, III, avR, avL, avF, V,
Waveform	2 ch
Lead mode	3 Leads (R, L, F or RA, LA, LL)
Lead selection	I, II, III,
Waveform	1 ch
Gain	×2.5mm/mV, ×5.0mm/mV, ×10mm/mV, ×20mm/mV

HR

Measure and Alarm Range

Adult	15 ~ 300 bpm

	Neo/Ped	15 ~ 350 bpm
	Accuracy	±1% or ±1bpm, which great
	Resolution	1 bpm
	Sensitivity	> 200 uV P-P
Differential Input Impedance		> 5 MΩ
CMRR		
	Monitor	≥ 100dB
	Operation	≥ 100 dB
	Diagnosis	≥60dB
Electrode offset potential		±300mV
Leakage Current		< 10 uA
Baseline Recovery		≤ 5 s After Defi.
ECG Signal Range		±8 mV (Vp-p)
Bandwidth		
	Surgery	1 ~ 20 Hz(+0.4dB,-3dB)
	Monitor	0.5Hz～40Hz(+0.4dB,-3dB)
	Diagnostic	0.05Hz~75Hz(+0.4dB,-3dB);76Hz~150Hz(+0.4dB,-4.5dB)
Calibration Signal		1 mV (Vp-p), ±5% Accuracy
ST Segment Monitoring Range		
	Measure and Alarm	-2.0 ~ +2.0 mV
	Accuracy	
	-0.8~+0.8mv	±0.04mv or ±10% which is greater
	Other	unspecified
	ARR Detecting	
	Type	ASYSTOLE, VFIB/VTAC, COUPLET, BIGEMINY, TRIGEMINY, R ON T, VT>2, PVC, TACHY, BRADY, MISSED BEATS, PNP, PNC
	Alarm	Available
	Review	Available
Tall T-wave rejection capability		1.2mV
Heart rate averaging		the average value of the latest 6 R-R intervals which have ignored the maximum and minimum
Updating rate of the display		1s

Heart rate meter accuracy and response to irregular rhythm:

Bigeminy ventricular	80bpm
Bigeminy ventricular alternative lente	57 or 63bpm
Bigeminy ventricular alternative rapid	122 or 123bpm
Systoles bidirectional	95bpm

Response time to heart rate meter to change in heart rate

80 to 120bpm		
	Average	3.7s
	Range	3.2s ~ 4.1s
80 to 40bpm		
	Average	4.7s
	Range	4.3s ~ 5.1s

Time to ALARM for tachycardia

Tachycardia ventricular:amplitude =1mV(p-v),heart rate = 206bpm

Ampitude	Average(s)	Range (s)
×1	2.5	2.2~ 2.9
×0.5	3.7	3.5~3.9
×2	3.2	3.0~3.3

Tachycardia ventricular :amplitude =2mV(p-v),heart rate = 195bpm

Ampitude	Average(s)	Range (s)
×1	4.2	4.1~4.3
×0.5	11.9	11.5~12.1
×2	3.0	2.9~3.1

2.8 RESPIRATION

Method Impedance between R-F(RA-LL)

Differential Input Impedance >2.5 MΩ

Measuring Impedance Range: 0.3~5.0Ω

Base line Impedance Range: 0.1 KΩ– 2.5 KΩ

Bandwidth 0.3 ~ 2.5 Hz

Resp. Rate

Measuring and Alarm Range

Adult 0 ~ 120 rpm

Neo/Ped 0 ~ 150 rpm

Resolution 1 rpm

Accuracy ±2 rpm

Apnea Alarm 10 ~ 40 s

2.9 NIBP

Method Oscillometric

Mode Manual, Auto, STAT

Measuring Interval in AUTO Mode

1, 2, 3, 4, 5, 10, 15, 30, 60, 90,120,180,240,480 Min

Measuring Period in STAT Mode 5 Min

Alarm Type SYS, DIA, MEAN

Measuring and alarm Range

Adult Mode

SYS 40 ~ 270 mmHg

DIA 10 ~ 215 mmHg

MEAN 20 ~ 235 mmHg

Pediatric Mode

SYS 40 ~ 200 mmHg

DIA 10 ~ 150 mmHg

MEAN 20 ~ 165 mmHg

Neonatal Mode

SYS 40 ~ 135 mmHg

DIA 10 ~ 100 mmHg

MEAN 20 ~ 110 mmHg

Resolution	
Pressure	1mmHg
Accuracy	
Pressure	
Mean error	±5mmHg
Maximum Standard deviation	8mmHg
Software Overpressure Protection	
Adult Mode	297±3 mmHg
Pediatric Mode	240±3 mmHg
Neonatal Mode	147±3 mmHg

2.10 SpO_2

Measuring Range	0 ~ 100 %
Alarm Range	0 ~ 100 %
Resolution	1 %
Accuracy	
	70% ~ 100% ±2 %
	0% ~ 69% unspecified
Actualization interval	about 1Sec.
Alarm Delay	10 Sec.
Pulse Rate	
Measuring and Alarm Range	
	30~250bpm
Resolution	1bpm
Accuracy	±2bpm

2.11 TEMPERATURE

Channel	2
Measuring and Alarm Range	0 ~ 50 ℃
Resolution	0.1℃
Accuracy	±0.1℃
Actualization interval	about 1 Sec.
Average Time Constant	< 10 Sec.

2.12 IBP

Channel	2
Label	ART, PA, CVP, RAP, LAP, ICP, P1, P2
Measuring and alarm range	
	-10~300mmHg
Press Sensor	
Sensitivity	5 uV/V/mmHg
Impedance	300-3000Ω
Resolution	1mmHg
Accuracy	±2% or 1mmHg which great
Actualization Interval	about 1 Sec

2.13 CO_2

Method		Infra-red Absorption Technique
Measuring mode		MainStream and Sidestream
Side-stream mode sampling gas flow rate		50ml/Min.±10ml/Min.
Measuring range		
	CO_2	0~150mmHg
	$INSCO_2$	0~150mmHg
	AwRR	0~150 BPM
Resolution		
	CO_2	0.1mmHg(0~69mmHg)
		0.25mmHg(70~150mmHg)
	$INSCO_2$	0.1mmHg(0~69mmHg)
		0.25mmHg(70~150mmHg)
Accuracy		
	CO_2	±2mmHg 0~40mmHg
		±5% of reading 41~70mmHg
		±8% of reading 71~100mmHg
		±10% of reading 101~150mmHg
	AwRR	±1 rpm
Initialization Time		
	Mainstream	Capnogram displayed in less than 15 seconds at an ambient temperature of 25℃, full specifications within 2 minutes.
	Sidestream	Capnogram displayed in less than 20 seconds at an ambient temperature of 25℃, full specifications within 2 minutes.
Mainstream Rise Time		
		Less than 60ms-Adult Reusable or Single-Patient-Use Airway Adapter
		Less than 60ms-Infant Reusable or Single-Patient-Use Airway Adapter
Actualization interval		about 1 Sec
Sidestream Delay Time:		2~3Sec
Alarm range		
	CO_2	0~150 mmHg
	$InsCO_2$	0~150 mmHg
	AwRR	0~150 BPM
Suffocation Alarm Delay		
	AwRR	10~60 Sec.