

CLASSIFICATION	
Safety Usage	Based on IEC 60601-1, Class I, Type CF for all modules (except Multi-gas & NIBP module that are BF) Continues Operation Equipment
Harmful Liquid Proof Degree	Ordinary Equipment, (without Liquid Proof)
DISPLAY	
B9 Display	TFT COLOR 1366 ´ 768, 18.5”
Waveforms	ECG, SPO2, IBP, RESP/GAS,EEG (All Freezable)
Sweep Speed	12.5, 25, 50 mm/sec
Numeric Parameters	HR,PVCs,ST,SPO2, Pulse Rate, NIBP (SYS, DIA, MAP) , IBP1(SYS,DIA,MAP) ,IBP2(SYS,DIA,MAP), IBP3(SYS,DIA,MAP), IBP4(SYS,DIA,MAP),RR, T1, T2, DT, EtCo2, FiCo2, AWRR,EtN2O,FiN2O,EtO2, FiO2,EtAA,FiAA,CSI,BS%,EMG%,SQI%
Operation Method	Membrane and rotary knob , Touch Screen (Optional)
ECG	
Leads	3/5/12 leads
Dynamic Range	± 5 mV
Leakage Current	< 10 µA
Lead Off Current	< 90 nA
Gain	4, 2, 1, 1/2, 1/4, Auto
Calibration	1mV, 0.5 sec
Filters	“MONITOR” (0.5 – 28 Hz)
	“NORMAL” (0.5 – 40 Hz)
	“EXTENDED” (0.05 – 100 Hz)
CMRR	> 98 dB
Internal Noise	< 30 µV RTI
Input Impedance	> 5 Mohm
QRS Detection	Duration: 40 to 120 msec
	Amplitude: 0.25 to 5 mV for Adult 0.2 to 5 mV for Neonate
Heart Rate Range	15 – 300 bpm for Adult 15 – 350 bpm for Neonate

Accuracy	±1% or 2 bpm
Tall T-Wave	Reject up to 1.2 mV Amp.
Pace Detection / Rejection	Duration: 0.1 – 2 msec
	Amp: ± 2 to ± 700 mV (Without over/undershoot)
	Reject From Heart Rate Counter
	Re-insert into ECG to display on screen
Protection	Defibrillator and Electro surgery
Standards	ANSI/AAMI EC-13
Arrhythmia Analysis	
Type	ASYS, VFIB, VTAC, RUN, AIVR, COUPLET, BIGEMINY, TRIGEMINY, TACHY, BRADY,AFIB, PAUS, FREQUENT PVCs
Learning	Rapid Learning: only 20 Seconds Required or Recognition of Dominant Rhythm
Method	Real Time Arrhythmia Detection with Innovative Feature.
Memory	Capability of storing the latest 80 ARR event. (waveform and Parameters)
ST Analysis	
Display resolution:	0.01 mV
Measurement Rang	-2mV to +2mV
Alarm Range:	-2mV to +2mV
Features:	User Adjustable Isoelectric and ST Point Trending of ST Values
Update period:	5 Sec.
SPO2 (MASIMO Rainbow SET)	
Method	2 Wave Length Pulse Wave Type
Range	Spo2 0 – 100% SpMet 0 – 99.9% SpCo 0 – 99% SpHb 0 – 25 g/dl SpOC 0 – 35 ml/dl PR 25 – 240 bmp PI 0.02 – 20% PVI 0 – 100%
Accuracy	Oxygen saturation During no motion conditions: Adult: ±3% (SPO2 60 ~ 80%) ±2% (SPO2 70 ~ 100%)

	<p>Neonate: 3% (SPO2 70 ~ 100%) During motion conditions: $\pm 3\%$ (SPO2 70 ~ 100%) During low perfusion conditions: $\pm 2\%$ (SPO2 70 ~ 100%)</p> <p>Pulse Rate During no motion conditions: ± 3 bpm During motion conditions: ± 5 bpm During low perfusion conditions: ± 3 bpm Carboxyhemoglobin Saturation: Adult: 1% – 40% $\pm 3\%$ Methemoglobin Saturation 1% – 15% $\pm 1\%$ Total Hemoglobin Adult: 8 – 17 g/dL ± 1g/dL</p>
NIBP	
Measurement method	Oscillometric
Measurement mode	Manual/Automatic(intervals between 1min-24hour) / STAT
Measurement time	20-25 sec (excluding cuff pressurization time)
Measurement Range	Adult: SYS 30 ~ 255 mmHg
	DIA 15 ~ 220 mmHg
	MAP 20 ~ 235 mmHg
	Neonate: SYS 30 ~ 135 mmHg
	DIA 15 ~ 110 mmHg
Measurement Range	MAP 20 ~ 125 mmHg
Pressure Transducer accuracy	± 3 mmHg full range
Initial Inflation Target	Adult 150 mmHg , Neonate 85 mmHg
Overall System Efficacy	ANSI/AAMI SP-10/2002
Memory	500 Records
IBP (optional)	
Channel	2 Channels (Up to 4)
Measurement Range	SYS -50 ~ 300 mmHg
	DIA -50 ~ 300 mmHg
	MAP -50 ~ 300 mmHg
Pressure sensor sensitivity	5 μ V / V / mmHg

Pressure sensor Impedance	300-2500 ohm
Resolution	1 mmHg
Accuracy	1 % or 1mmHg (every one is which is more)Without Transducer
Filters	Adjustable 8, 16, 22 Hz

CO2 Main Stream (Optional)	
Method	Infra-red absorption
Measuring Parameters	EtCo2, FiCo2, AWRR
Measuring range	Co2 0 – 15% AWRR 0-150 BrPM
Accuracy	Co2 $\pm(0.2 V\% + 2\%$ of reading) AWRR ± 1BrPM
CO2 side- Stream (Optional)	
Method	Infra-red absorption
Measuring Parameters	EtCo2, FiCo2, AWRR
Measuring range	Co2 0 – 15% AWRR 0-150 BrPM
Accuracy	Co2 $\pm(0.2 V\% + 2\%$ of reading) AWRR ± 1BrPM
Multi gas Main Stream (Optional)	
Method	Infra-red absorption
Oxygen sensor type	Ultrafast response time galvanic oxygen sensor.
Measuring Parameters	CO2,O2,N2O, 5 Anesthesia Agent(HAL,ISO,ENF,SEV,DES), AWRR
Measuring range, Accuracy	CO2 0–10% $\pm(0.2 V\% + 2\%$ of reading) 10–15% $\pm(0.3 V\% + 2\%$ of reading) NO2 0-100% $\pm(0.2 V\% + 2\%$ of reading) HAL, ISO, ENF 0-8% $\pm(0.15 V\% + 5\%$ of reading) SEV 0-10% $\pm(0.15 V\% + 5\%$ of reading) DES 0-22% $\pm(0.15 V\% + 5\%$ of reading) O2 0-100% $\pm(1 V\% + 2\%$ of reading) AWRR 0-150BrPM ± 1BrPM
Multi gas side- Stream (Optional)	
Method	Infra-red absorption

Oxygen sensor type	Ultrafast response time galvanic oxygen sensor.
Measuring Parameters	CO2,O2,N2O, 5 Anesthesia Agent(HAL,ISO,ENF,SEV,DES), AWRR
Measuring range, Accuracy	CO2 0–15% ±(0.2 V% + 2% of reading) NO2 0-100% ±(0.2 V% + 2% of reading) HAL, ISO, ENF 0-8% ±(0.15 V% + 5% of reading) SEV 0-10% ±(0.15 V% + 5% of reading) DES 0-22% ±(0.15 V% + 5% of reading) O2 0-100% ±(1 V% + 2% of reading) AWRR 0-150BrPM ±1BrPM
Cerebral State Monitor (optional)	
Function	Measure the direct effect of anesthesia and sedative drugs on brain
Measuring parameters	CSI%, BS%, SQI%, EMG (Bar)
Waveform	EEG
connection	Wireless
RESPIRATION	
Method	Impedance
Base Resistance	250 – 1250 Ohm
Dynamic Range	0.2 – 2 Ohm
Breath Rate Range	6 – 150 BrPM
TEMPERATURE	
Probe Type	YSI 400 Compatible
Range	0 – 50 °C
Accuracy	± 0.2 °C
ALARM	
Sources	Error messages, all other Parameter Limits
Alarm On / Off	Selectable for All Parameters
Alert	Blinking on Display,
	Volume Selectable Audio Alarms, Light indicator
TREND	
Sources	HR,PVCs,ST,SPO2, RR, T1, T2, IBP1(SYS,DIA,MAP) , IBP2(SYS,DIA,MAP), IBP3(SYS,DIA,MAP), IBP4(SYS,DIA,MAP) EtCo2, FiCo2, AWRR, EtN20, FiN2O, EtO2, FiO2, EtAA, FiAA (ISO, DES ,ENF , HAL ,S

Trend Time	15, 30 , 45 Min, 1, 2, 4, 8, 12,16, 24,36, 48, 72, 96 Hours
Resolution	1 sec
INPUT/OUTPUT	
Network	Digital, Serial, Full Duplex
Connection	Up to 16 BEDs to one CENTRAL
GENERAL	
Safety	Based on IEC 60601-1
Protection	Against Electro surgery and Defibrillator
AC Power	90 – 240 VAC, 50/60 Hz
Internal Battery	Lithium polymer, 11.1 V , 4 AH Charge Time: 16 Hours Usage: More than 3 Hours (Full Charge)
DC Power Plug	12 – 14V – 3A / (6A with recorder)
Dimension (cm)	45 (W) ´ 35 (H) ´ 16 (D)
Weight	7 Kg (approximately)
RECORDER (Optional)	
Model	SAADAT Thermal Printer
Printing Speed	6,12.5, 25, 50 mm/sec
Paper	58mm by 100 foot roll
ENVIRONMENTAL	
Temperature	Operating : 5 to 40°C (For Gas Module: 10 to 35°C) Storage : -20 to 60°C (For Gas Module: -20 to 50°C)
Humidity	20-90% (Non condensing)
Altitude	-200 to 3000m