iM60

Patient Monitor

Version 1.1

Data Sheet

EDAN

iM60 Patient Monitor Specification		
Physical Specifications		
Dimension	303 mm (W) × 254 mm (H) × 161 mm (D)	
Weight	< 3.8 kg (standard configuration, without battery)	
Power Supply		
Power Supply	100 V to 240 V~, 50 Hz/60 Hz	
Current	1.4 A-0.7 A	
Battery		
Battery Type	Rechargeable lithium-ion battery	
Capacitance	2500 mAh , 5000 mAh	
Operating Time	2500 mAh	≥3.5 h
	5000 mAh	≥7 h
Charge Time	2500 mAh	≤3.5 h, 100% charge ≤3.15 h, 90% charge
	5000 mAh	≤6.5 h, 100% charge ≤5.85 h, 90% charge
Display		
Display screen	10.4 inch color TFT, touch screen available	
Resolution	800×600	
Wave	A maximum of 13 waveforms (with 12-lead ECG function)	
Recorder		
Record Width	48 mm	
Paper Speed	12.5 mm/s, 25 mm/s, 50 mm/s	
Channels	3	
Recording types	Continual real-time recording 8-second real-time recording 20-second real-time recording, Trend graph recording Trend table recording NIBP review recording Arrhythmia review recording Alarm review recording Drug calculation titration recording Hemodynamic Calculation result recording Oxygenation Calculation result recording Ventilation Calculation result recording Renal Function Calculation result recording 12-lead diagnosis recording C.O. measurement recording Frozen waveform recording	

Data Storage		
Internal Temporary Memory	Trend data	1 hour, at 1 s resolution 120 hours, at 1 min resolution
	Alarm events	Up to 200 sets
	NIBP Measurement data	1200 sets
	Arrhythmia events	Up to 200 sets
	12-lead Diagnosis results	Up to 50 sets
Non-volatile Memory (internal or external storage device)	A single piece of patient data maximally contains the following information:	
	Trend graph and trend table	240 hours
	NIBP measurement review	1200 sets
	Alarm review	200 sets
	Arrhythmia event	200 sets
	12-lead diagnosis review	50 sets
	Full disclosure Waveforms	48 hours
Wi-Fi		
IEEE	802.11b/g/n	
Frequency Band	2.4 GHz ISM band	
Interfaces and others		
Nurse call / analog output/ defibrillator synchronization		1
USB Port		2
VGA Interface		1
Network Interface		1
Anti-theft lock interface		1
ECG		
Lead Mode	3-Lead: I, II, III 5-Lead: I, II, III, aVR, aVL, aVF, V 12-Lead: I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, V6	
Lead naming style	AHA, IEC	
Display Sensitivity (Gain Selection)	1.25 mm/mV (×0.125), 2.5 mm/mV (×0.25), 5 mm/mV (×0.5),10 mm/mV (×1), 20 mm/mV (×2), 40 mm/mV (×4), AUTO gain	
Sweep speed	6.25 mm/s, 12.5 mm/s, 25 mm/s, 50 mm/s	
Bandwidth (-3 dB)	Diagnosis: 0.05 Hz to 150 Hz Monitor: 0.5 Hz to 40 Hz Surgery: 1 Hz to 20 Hz	
CMRR	Diagnosis: >95 dB Monitor: >105 dB Surgery: >105 dB	
Notch	In diagnosis, monitor and surgery modes: 50 Hz/60 Hz (Notch filter can be turned on or off manually)	

Recovery time after defibrillation	<5 s		
ESU Protection	Cut mode: 300 W Coagulation mode: 100 W Restore time: ≤10 s		
Pace pulse detecting lead	one among I, II, III, AVR, AVL, AVF, V1, V2, V3,V4, V5, V6		
Heart Rate			
Range	Adult: 15 bpm to 300 bpm Ped: 15 bpm to 350 bpm		
Accuracy	±1% or ±1 bpm, whichever is greater		
Resolution	1 bpm		
PVC			
Range	Adult: 0 to 300 PVCs/ min Ped/Neo: 0 to 350 PVCs/ min		
Resolution	1 PVCs/min		
ST value			
Range	-2.0 mV to +2.0 mV		
Accuracy	±0.02 mV or 10% (-0.8 mV to +0.8 mV), whichever is greater. Beyond this range: not specified.		
Resolution	0.01 mV		
Arrhythmia analyses			
Asystole	Sustain VT	V-Fib/V-Tach	ExtremeTachy
ExtremeBrady	V-Tach	Vent Brady	Tachy
Brady	Wide QRS Tachy	Non-Sustain VT	Afib
Vent Rhythm	Acc. Vent Rhythm	Pause	Pauses/min High
PVCs High	R on T	PVC Bigeminy	PVC Trigeminy
Pacer not Pacing	Pacer not Capture	Missed Beat	VEB
PVC	Couplet	Run PVCs	Multiform PVCs
IPVC	Irr Rhythm	PAC Bigeminy	PAC Trigeminy
Low Voltage(Limb)			
12-lead ECG synchronization analysis			
Average parameters of heart beat			
Heart rate (bpm)			
Time limit of P wave (ms)			
PR interval (ms)			
QRS interval (ms)			
QT/QTC (ms)			
P-QRS-T AXIS			

RESP		
Method	Impedance between RA-LL, RA-LA	
Measurement lead	Options are lead I and II	
Measuring Range	Adult	0 rpm to 120 rpm
	Ped/Neo	0 rpm to 150 rpm
Resolution	1 rpm	
Accuracy	Adult	6 rpm to 120 rpm: ±2 rpm 0 rpm to 5 rpm: not specified
	Ped/Neo	6 rpm to 150 rpm: ±2 rpm 0 rpm to 5 rpm: not specified
Gain Selection	×0.25, ×0.5, ×1, ×2, ×3, ×4, ×5	
Sweep	6.25 mm/s, 12.5 mm/s, 25.0 mm/s, 50.0 mm/s	
Apnea Alarm Time	10 s, 15 s, 20 s, 25 s, 30 s, 35 s, 40 s	
NIBP		
EDAN Module		
Method	Oscillometry	
Mode	Manual, Auto, Continuous	
Measuring Interval in Auto Mode	1/2/3/4/5/10/15/30/60/90/120/180/240/360/480 min	
Continuous	5 min, interval is 5 s	
Measuring Type	SYS, DIA, MAP, PR	
Measuring Range	Adult Mode	SYS: 40 mmHg to 270 mmHg DIA: 10 mmHg to 215 mmHg MAP: 20 mmHg to 235 mmHg
	Pediatric Mode	SYS: 40 mmHg to 230 mmHg DIA: 10 mmHg to 180 mmHg MAP: 20 mmHg to 195 mmHg
	Neonatal Mode	SYS: 40 mmHg to 135 mmHg DIA: 10 mmHg to 100 mmHg MAP: 20 mmHg to 110 mmHg
Cuff Pressure Measuring Range	0 mmHg to 300 mmHg	
Pressure Resolution	1 mmHg	
Maximum Mean Error	±5 mmHg	
Maximum Standard Deviation	8 mmHg	
Maximum Measuring Period	Adult/ Pediatric	120 s
	Neonatal	90 s
Typical Measuring Period	20 s to 35 s (depend on HR/motion disturbance)	

Overpressure Protection	Adult	297±3 mmHg
	Pediatric	245±3 mmHg
	Neonatal	147±3 mmHg
PR		
Measuring range	40 bpm to 240 bpm	
Accuracy	±3 bpm or 3.5%, whichever is greater	
SunTech Module		
Method	Oscillometric	
Mode	Manual, Auto, Continuous	
Measuring Interval in AUTO Mode	1/2/3/4/5/10/15/30/60/90/120/240 min	
Measuring Type	SYS, DIA, MAP, PR	
Measuring Range	Adult Mode	SYS: 40 mmHg ~ 260 mmHg DIA: 20 mmHg ~ 200 mmHg MAP: 26 mmHg– 220 mmHg
	Pediatric Mode	SYS: 40 mmHg– 230 mmHg DIA: 20 mmHg– 160 mmHg MAP: 26 mmHg– 183 mmHg
	Neonatal Mode	SYS: 40 mmHg – 130 mmHg DIA: 20 mmHg– 100 mmHg MAP: 26 mmHg – 110 mmHg
Pressure Resolution	1 mmHg	
Maximum mean error	±5 mmHg	
Maximum standard deviation	8 mmHg	
Maximum measuring period	Adult/Pediatric	130 s
	Neonate	75 s
Overpressure protection	Adult/Pediatric	< 300 mmHg
	Neonate	< 150 mmHg
PR		
Measuring range	30 bpm to 220 bpm	
Accuracy	±3 bpm or ±2%, whichever is greater	
SpO_2		
EDAN Module		
Measuring Range	0% to 100%	
Resolution	1%	
Data update period	1 s	
Accuracy	Adult/Pediatric	±2% (70% to 100% SpO_2)

		Undefined (0% to 69% SpO_2)
	Neonatal	±3% (70% to 100% SpO_2) Undefined (0% to 69% SpO_2)
PI (Perfusion Index)		
Measuring Range	0-10	
Resolution	1	
Pulse Rate		
Measuring Range	25 bpm to 300 bpm	
Resolution	1 bpm	
Accuracy	±2 bpm	
Nellcor Module		
Measuring Range	1% to 100%	
Resolution	1%	
Data Update Period	1 s	
Accuracy	DS-100A, OXI-A/N(Adult) D-YS (Adult and Pediatric) OXI-P/I (Pediatric)	±3% (70% to 100% SpO_2)
	MAX-A, MAX-AL, MAX-N, MAX-P, MAX-I, MAX-FAST (Adult and Pediatric)	±2% (70%～100% SpO_2)
	MAX-A, MAX-AL, MAX-N, MAX-P, MAX-I, MAX-FAST (Adult and Pediatric)	±3% (60%～80% SpO_2)
	If sensor is used for neonate as recommended, the accuracy will be larger than adult by ±1.	
Pulse Rate		
Measuring Range	20 bpm to 300 bpm	
Resolution	1 bpm	
Accuracy	±3 bpm (20 bpm to 250 bpm)	
TEMP		
Channel	2	
Sensor type	YSI-10K and YSI-2.252K	
Technique	Thermal resistance	
Measure Parameter	T1, T2, TD	
Position	Skin, Oral, Rectum	
Unit	°C , ºF	
Measuring Range	0°C to 50°C (32 ºF to 122 ºF)	
Resolution	0.1°C (0.1 ºF)	
Accuracy	Accuracy (not including sensor): ±0.1°C	
	Sensor accuracy: ≤ ±0.2°C	
Transient Response Time	≤30 s	

IBP			
Channel	2		
Technique	Direct invasive measurement		
Measuring range	Art	0 mmHg to +300 mmHg	
	PA	-6 mmHg to +120mmHg	
	CVP/RAP/LAP/ICP	-10 mmHg to +40 mmHg	
	P1/P2	-50 mmHg to +300 mmHg	
Resolution	1 mmHg		
Accuracy (not including sensor)	±2% or ±1 mmHg, whichever is greater ICP: 0 mmHg to 40 mmHg: ±2 % or ±1 mmHg, whichever is greater; -10 mmHg to 0 mmHg: undefined		
Unit	kPa, mmHg, cmH2O		
PR			
Measuring Range	20 bpm to 300 bpm		
Resolution	1 bpm		
Accuracy	30 bpm to 300 bpm: ±2 bpm or ±2%,whichever is greater; 20 bpm to 29 bpm: undefined		
CO_2			
EDAN G2 Module			
Intended patient	Adult, Pediatric, Neonatal		
Measure Parameters	$EtCO_2$, $FiCO_2$, AwRR		
Unit	mmHg, %, kPa		
Measuring Range	CO_2	0 mmHg to 150 mmHg (0% to 20%)	
	AwRR	2 rpm to 150 rpm	
Resolution	$EtCO_2$	1 mmHg	
	$FiCO_2$	1 mmHg	
	AwRR	1 rpm	
Accuracy	$EtCO_2$	±2 mmHg, 0 mmHg to 40 mmHg	Typical conditions: Ambient temperature:(25±3)°C Barometric pressure:(760±10) mmHg Balance gas: N_2 Sample gas flowrate: 100ml/min
		±5% of reading, 41 mmHg to 70 mmHg	
		±8% of reading, 71 mmHg to 100 mmHg	
		±10% of reading, 101 mmHg to 150 mmHg	
		±12% of reading or 4 mmHg, whichever is greater	All conditions
	AwRR	±1 rpm	
Sample Gas Flowrate	70 ml/min or 100 ml/min, accuracy: ±15 ml/min		
Warm-up time	Display waveform within 20 s		

	Reach the design accuracy within 2 minutes.	
Response time	<4 s	
Barometric pressure compensation	Automatic	
Zero Calibration	Support	
Calibration	Support	
Apnea alarm delay	10 s, 15 s, 20 s, 25 s, 30 s, 35 s, 40 s, 60s	
Respironics Module		
Applicable Patient Type	Adult, Pediatric and Neonatal	
Method	Infra-red Absorption Technique	
Measure Parameters	$EtCO_2$, $FiCO_2$, AwRR	
Unit	mmHg/ %/ kPa	
Measuring Range	$EtCO_2$	0 mmHg to 150 mmHg
	$FiCO_2$	3 mmHg to 50 mmHg
Measuring Range	AwRR	2 rpm to 150 rpm (Sidestream) 0 rpm to 150 rpm (Mainstream)
Resolution	$EtCO_2$	1 mmHg
	$FiCO_2$	1 mmHg
	AwRR	1 rpm
Accuracy	$EtCO_2$	±2 mmHg, 0 mmHg to 40 mmHg
		±5% of reading, 41 mmHg to 70 mmHg
		±8% of reading, 71 mmHg to 100 mmHg
		±10% of reading, 101 mmHg to 150 mmHg
		±12% of reading, RR is over 80 rpm (Sidestream) There will be no degradation in performance due to respiration rate. (mainstream)
	AwRR	±1 rpm
Sample Gas Flow Rate (Sidestream)		50 ml /min ±10 ml /min
Barometric Pressure Compensation		User setup
CO_2 Rise Time/Response Time (Mainstream)		< 60 ms
Sensor Response time (Sidestream)		<3 seconds - includes transport time and rise time
Zero Calibration		Support
Apnea Alarm Delay		10 s, 15 s, 20 s, 25 s, 30 s, 35 s, 40 s
C.O.		
Technique	Thermodilution Technique	

Measure Parameters	C.O., TB, TI		
Measuring Range	C.O.	0.1 L/min to 20 L/min	
	TB	23°C to 43° C(73.4ºF to 109.4ºF)	
	TI	-1° C to 27° C(30.2ºF to 80.6ºF)	
Resolution	C.O.	0.1 L/min	
	TB, TI	0.1° C (+0.1 ºF)	
Accuracy	C.O.	±5% or ±0.2 l/min, whichever is greater	
	TB	±0.1° C (not including sensor)	
	TI	±0.1° C (not including sensor)	
Safety Specifications			
Compliant with Standards	IEC 60601-1: 2005+A1 :2012; IEC 60601-1-2: 2014; EN 60601-1: 2006+A1 :2013; EN 60601-1-2: 2007; IEC 60601-2-49: 2011		
Anti-electroshock Type	Class I equipment and internal powered equipment		
Anti-electroshock Degree	CF	ECG (RESP), TEMP, IBP, C.O.	
	BF	SpO_2 , NIBP, CO_2	
Ingress Protection	IPX1		
Environmental Specifications			
Temperature	Working	+0°C to +40°C (32ºF ~ 104ºF)	
	Transport and Storage	-20°C to +55°C (-4ºF ~ 131ºF)	
Humidity	Working	15%RH to 95%RH (non-condensing)	
	Transport and Storage	15%RH to 95%RH (non-condensing)	
Altitude	Working	86 kPa to 106 kPa	
	Transport and Storage	70 kPa to 106 kPa	

** Specifications are subject to change without prior notice*

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