CX12

Patient Monitor

Main Unit Specification

Physical Specifications

Dimension	330.1 mm (W) × 244.2 mm (H) × 176.2 mm (D)
Weight	4.0 kg (Standard configuration with battery, excluding recorder and accessories)

Power Supply

AC Voltage	100 V to 240 V
Input Current	0.6 A to 0.3 A
Frequency	50 Hz/60 Hz
Over Current Fuse Protection	Support

Battery

Battery Type	Rechargeable lithium-ion battery	
Operating Time	One battery (2550 mAh)	≥ 4 h
	One battery (5100 mAh)	≥ 8 h
Charge Time	One battery (2550 mAh)	≤ 3.5 h (monitor is off) ≤ 5.5 h (monitor is on or standby)
	One battery (5100 mAh)	≤ 6.5 h (monitor is off) ≤ 11 h (monitor is on or standby)

Display

Display screen	13.3-inch color TFT, touch screen optional
Resolution	1920 × 1080
Messages	A maximum of 10 waveforms

Recorder

Record Width	48 mm
Record Paper Width	50 mm
Paper Speed	12.5 mm/s, 25 mm/s, 50 mm/s
Number of waveform channels	A maximum of 3

Data Storage

Trend data	48 hours @ 1 s 240 hours @ 1 min
NIBP Measurement	At least 1600 sets
Alarm Events	Up to 1800 sets
Full Disclosure Waveform	48 hours @ 1 s

Wi-Fi

IEEE	802.11a/b/g/n
Frequency Band	2.4 G/5 G

Interfaces and Others

Analog Output	1
Defibrillator Synchronization	1
Nurse Call	1
USB Interfaces	2
Video Output Interface	1
Ethernet interface (RJ-45)	1

ECG

Lead Mode	3 Electrodes: I, II, III 5 Electrodes: I, II, III, aVR, aVL, aVF, V 6 Electrodes: I, II, III, aVR, aVL, aVF, and leads corresponding to Va Vb 10 Electrodes: I, II, III, aVR, aVL, aVF, V1-V6
Lead naming style	AHA, IEC
Display Sensitivity	×0.125, ×0.25, ×0.5, ×1,×2,×4, AUTO gain
Sweep	6.25 mm/s, 12.5 mm/s, 25 mm/s, 50 mm/s
Bandwidth (-3 dB)	Diagnosis: 0.05 Hz to 150 Hz ST: 0.05 Hz to 40 Hz Monitor and Monitor (Hi-Fi): 0.5 Hz to 40 Hz Surgery: 1 Hz to 20 Hz Enhanced: 2 Hz ~18 Hz Customized: High-pass Filter and Low-pass Filter (See Changing the ECG Filter Settings)
CMRR	Diagnosis: > 95 dB ST: > 105 dB Monitor and Monitor (Hi-Fi): > 105 dB Surgery: > 105 dB Enhanced: > 105 dB Customized: > 105 dB (Low-pass Filter < 40 Hz) > 95 dB (Low-pass Filter > 40 Hz)
Hum Filter	In diagnosis, ST, monitor, surgery, enhanced and customized modes: 50 Hz/60 Hz (Hum Filter can be turned on or off manually)
Recovery Time After Defibrillation	< 5 s (measured without electrodes as IEC60601-2-27:2011, Sect. 201.8.5.5.1 requires.)
ESU Protection	Cut mode: 300 W Coagulation mode: 100 W Restore time: ≤10 s
Pace pulse detection	one among I, II, III, aVR, aVL, aVF, V1-V6

Heart Rate

Range	ADU: 15 bpm to 300 bpm PED/NEO: 15 bpm to 350 bpm
Accuracy	±1% or ±1 bpm, whichever is greater
Resolution	1 bpm (For display and alarm limit)

PVCs

Range	ADU: 0 to 300 PVCs/ min PED/NEO: 0 to 350 PVCs/ min
Resolution	1 PVCs/min (For display and alarm limit)

Pause/min

Range	ADU/PED/NEO: (0 to 30) pauses/min
Resolution	1 pause/min (For display and alarm limit)

ST value

Range	-2.0 mV to +2.0 mV
Accuracy	-0.8 mV to +0.8 mV: ±0.02 mV or 10%, whichever is greater. Beyond this range: not specified.
Resolution	0.01 mV (For display and alarm limit)

QT measurement

Range	200 ms ~ 800 ms
Resolution	4 ms (For display)
Accuracy	± 30 ms

QTc measurement

Range	200 ms ~ 800 ms
Resolution	1 ms (For display and alarm limit)

ΔQTc measurement

Range	-600 ms ~ 600 ms
Resolution	1 ms (For display and alarm limit)

Arrhythmia analysis

Asystole, V-Fib/V-Tach, Couplet, Vent Rhythm, PVC Bigeminy, PVC Trigeminy, Tachy, R on T, PVC, Irr Rhythm, Brady, Missed Beat, Pacer not Pacing, Vent Brady, Pacer not Capture, VEB, Run PVCs, Acc. Vent Rhythm, IPVC, Non-Sustain VT, Non-Sustain VT, Pauses/min High, Pause, Afib, PAC Bigeminy, PVCs High, Low Voltage(Limb), ExtremeBrady, PAC Trigeminy, Wide QRS Tachy, Sustain VT, ExtremeTachy, V-Tach

RESP

Method	Impedance between RA-LL, RA-LA
Measurement lead	Options are lead I and II. The default is lead II.
Measuring range	0 rpm to 200 rpm
Resolution	1 rpm (For display and alarm limit)
Accuracy	0 rpm to 120 rpm: ±1 rpm 121 rpm to 200 rpm: ±2 rpm
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
No Breath Detected Alarm Time Setup	10 s, 15 s, 20 s (Default), 25 s, 30 s, 35 s, 40 s

EDAN Module NIBP

Method	Oscillometry
Mode	Manual, Auto, Continuous, Sequence
Measuring Interval in Auto Mode	1/2/2.5/3/4/5/10/15/30/60/90/120/180/240/360/480 min and User Define
Continuous	5 min, interval is 5 s
Measuring Type	SYS, DIA, MAP, PR
Measuring Range	
Adult Mode	SYS: 25 mmHg to 290 mmHg DIA: 10 mmHg to 250 mmHg MAP: 15 mmHg to 260 mmHg
Pediatric Mode	SYS: 25 mmHg to 240 mmHg DIA: 10 mmHg to 200 mmHg MAP: 15 mmHg to 215 mmHg
Neonatal Mode	SYS: 25 mmHg to 140 mmHg DIA: 10 mmHg to 115 mmHg MAP: 15 mmHg to 125 mmHg
Cuff Pressure Measuring Range	0 mmHg to 300 mmHg
Pressure Resolution	1 mmHg (For display and alarm limit)
Maximum Mean Error	±5 mmHg
Maximum Standard Deviation	8 mmHg
Maximum Measuring Period	Adult/ Pediatric: 120 s Neonatal: 90 s
Typical Measuring Period	iCUFS measurement: 20 s to 35 s iFAST measurement: 15 s
Dual Independent Channel Overpressure Protection	Adult: (297±3) mmHg Pediatric: (245±3) mmHg Neonatal: (147±3) mmHg

EDAN Module SpO_2

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	0.05% to 20%, invalid PI value is -?-.
Resolution	0.01% (0.05%-9.99%) 0.1% (10.0%-20.0%)

PR

PR (SpO_2)

Measuring range	20 bpm to 300 bpm
Accuracy	±2 bpm
Resolution	1 bpm (For display and alarm limit)

PR (NIBP)

Measuring range	40 bpm to 240 bpm
Accuracy	±3 bpm or 3.5%, whichever is greater
Resolution	1 bpm (For display)

PR (IBP)

Measuring range	20 bpm to 300 bpm
Accuracy	30 bpm to 300 bpm: 2 bpm or 2%, whichever is greater 20 bpm to 29 bpm: Undefined
Resolution	1 bpm (For display and alarm limit)

TEMP

Channel	2
Sensor Type	YSI-10K and YSI-2.252K
Technique	Thermal resistance
Measure Parameter	T1, T2, TD (the absolute value of T2 minus T1)
Position	Skin, cavity
Unit	°C, ºF
Measuring Range	0°C to 50°C (32ºF to 122ºF)
Resolution (For display and alarm limit)	0.1°C (0.1ºF)
Accuracy	(1) Sensor accuracy: 25°C ~45°C: ±0.1; Others: ±0.2°C

	(2) Without sensor accuracy: ±0.1°C
Transient Response Time	≤30 s

IBP

Channel	2
Technique	Direct invasive measurement
Measuring Range	-50 ~ +360 mmHg
Resolution	1 mmHg (For display and alarm limit)
Accuracy (not including sensor)	±2% or ±1 mmHg, whichever is greater
Unit	kPa, mmHg, cmH_2O

EDAN G2 Sidestream Module CO_2

Intended patient	Adult, pediatric, neonatal
Measure Parameters	$EtCO_2$, $FiCO_2$, AwRR
Unit	mmHg, %, kPa
Measuring Range	$EtCO_2$: 0 mmHg to 152 mmHg
	$FiCO_2$: 0 mmHg to 50 mmHg
	AwRR: 0 rpm to 150 rpm
Resolution (For display and alarm limit)	$EtCO_2$: 1 mmHg
	$FiCO_2$: 1 mmHg
	AwRR: 1 rpm
$EtCO_2$ Accuracy	
Typical conditions:	±2 mmHg, 0 to 40 mmHg
Ambient temperature: (25± 3) °C	±5% of reading, 41 to 70 mmHg
Barometric pressure: (760± 10) mmHg	±8% of reading, 71 to 100 mmHg
Balance gas: N_2	±10% of reading, 101 to 150 mmHg
Sample gas flowrate: 100 ml/min	
AwRR Accuracy	±1 rpm
Sample Gas Flowrate	50 ml/min, 70 ml/min or 100 ml/min (optional), accuracy: ±15 ml/min
Warm-up Time	Display reading within 20 s; reach to the designed accuracy within 2 minutes.
Response Time	< 4 s (with 2 m gas sampling tube, sample gas flowrate: 100 ml/min&70 ml/min)
	< 5.5 s (with 2 m gas sampling tube, sample gas flowrate: 50 ml/min)
Barometric Pressure Compensation	Automatic (The change of barometric pressure will not add additional errors to the measurement values.)
Zero Calibration	Support
Calibration	Support (It is recommend to be operated by trained personal.)
No Breath Detected Alarm Delay	10 s, 15 s, 20 s (Default), 25 s, 30 s, 35 s, 40 s

Safety Specifications

Compliant with Standards	IEC 60601-1; IEC 60601-1-2; EN 60601-1; EN 60601-1-2; IEC 80601-2-49
Anti-electroshock Type	Class I equipment and internal powered equipment
Anti-electroshock Degree	CF
Ingress Protection	IPX1

Environmental Specifications

Temperature	Working: +0°C to +40°C (32ºF ~ 104ºF)
	Transport and storage: -20°C to +60°C (-4ºF ~ 140ºF)
Relative Humidity	Working: 15%RH to 95%RH (non-condensing)
	Transport and storage: 10%RH to 95%RH (non-condensing)
Barometric Pressure	Working: 57 kPa to 107.4 kPa
	Transport and storage: 16 kPa to 107.4 kPa

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 (For display and alarm limit)	C.O. : 0.1 L/min
	TB, TI : +0.1°C (+0.1ºF)
Accuracy	C.O.: ±5% or ±0.2 L/min, whichever is greater
	TB: ±0.1°C (±0.18 ºF) (not including sensor)
	TI : ±0.1°C (±0.18 ºF) (not including sensor)

EDAN