

Specification: A7



SHENZHEN COMEN MEDICAL INSTRUMENTS CO.,LTD

Floor 10, Floor 11 and Section C of Floor 12 of Building 1A & Floor 1 to Floor 5 of Building 2, FIYTA Timepiece Building, Nanhuan Avenue, Matian Sub-district, Guangming District, Shenzhen, Guangdong, 518106,P.R. China

Tel: +86-755-26408879

Fax: +86-755-26431232

Email: info@szcomen.com

Web: www.comen.com

Anesthesia Machine

A7



Technical Specification	
Physical Characteristics	
Size	780 mm*676 mm*1390 mm
Weight	90kg (without vaporiser and cylinder)
Screen Size:	8.4" TFT touch screen
Resolution	800 *600
Handrail Length	412mm
Caster wheel	4 wheels, Foot brakes optional; size 4"
brightness	adjustable
Operation Environment	
Working Temp	10~40°C
Humidity	≤93%
Power Supply	100-240V~, 50/60Hz±1Hz
Battery Type	Rechargeable Lithium-ion battery
Battery Capacity	standard 2200mAh; optional 4400mAh;
Battery Recharging Time	6 hours for charging;
Battery backup	Standard configuration: 60 min for continuous working optional configuration: 6 hours for continuous working
Waveforms Spirometry	Pressure-time; Flow rate-time; Volume-time; EtCO ₂ ; EEG Optional: Pressure-volume Loops; Flow-volume Loops; Pressure- flow Loops
Top Plate	
Maximum supporting capacity	20kg
Operational dimensions	535mm×235mm
Dimensions with Additional Accessory	508mm×313mm×380mm
Workbench	
Maximum supporting capacity	20kg

Operational dimensions	850mm*480mm*230mm
Interface:	
	1 USB interfaces
	1 RJ45 network interface
	3 auxiliary power output
	1 AC power interface
	1 Equal-potential grounding terminal
	1 DB9 interface
Drawers	
Single drawer	Optional
Three drawer	Standard
Top:	Size:392mm*333mm*150mm Bearing Weight: 1Kg
Features	
Patients	Adult, pediatric
Working Mode	Manual, Mechanical, Standby
Compliance	Compliance Correction
Standard Configuration	8.4" TFT touch screen, Lithium-ion battery of 60 min, 2 tube flowmeter(Single oxygen pipeline), single drawer, single vaporiser slot, flush Oxygen; foot brake,3 auxiliary power output, breath circuit system;
Standard ventilation	VCV, PCV
Optional Configuration	MASIMO EtCO ₂ (mainstream); MASIMO AG (sidestream); Respiration EtCO ₂ (mainstream); Respiration EtCO ₂ (Sidestream); MASIMO AG+O ₂ (sidestream); Artema AG; Artema AG+O ₂ ; Optimal flow indication; Anesthetic usage monitoring; CPB

Ventilator Specification	
Ventilation Modes	
VCV/VC	Volume-Controlled Ventilation
PCV/VPC	Pressure Control Ventilation
SIMV-VC, SIMV-PC	Synchronized Intermittent Mandatory Ventilation
PRVC	Pressure Regulated Volume Control
PSV/ CPAP	Pressure Support Ventilation
PSV Pro	Pressure support ventilation for apnea backup
SIMV-PRVC	Synchronized Intermittent Mandatory Pressure Regulated Volume Control Ventilation
Others	Manual and automatic ventilation
Ventilation principle	Chronometric, volumetric and barometric
Ventilation	Electronically controlled& pneumatically driven
Driven gas	O2(air: optional)
Breathing circuit volume	1000 ml + bag
Ventilator Setting ranges	
Tidal volume range	15 ~1500 mL
MV (Per-minute ventilation amount)	0~100 L/min
Plimit (pressure)	10~100 cmH2O
RR	3~60 cmH2O
f (Respiratory Rate)	4~100 bpm
I.E. (Inspiratory Expiratory ratio)	4:1~1:10
Apnea I.E.	4:1~1:8
Apnea time	10~30s
Apnea pressure	3~60 cmH2O
Freq. Min. (Min. frequency for apnea-ventilation)	2-60 bpm
Tpause (Inspiratory pause)	OFF, 5~60% of inspiratory time
Tinsp (Inspiratory time)	0.2~5s
Pinsp (Inspiratory pressure)	5~70 cmH2O
PEEP	OFF, 3~30 cmH2O
Trigger pressure	-20~-1 cmH2O
Trigger window	5~90%
Trigger flow rate	0.2~15 L/ min
Flush oxygen (Rapid Oxygenation)	25~75 L/ min
Inspiratory stop level	5~80%
Tslope (Pressure slope)	0~2.0s

Ventilator Monitoring Ranges	
Monitoring parameter	
Tidal volume, Inspiratory/expiratory, Tidal Volume, minute volume, Oxygen Concentration, frequency, pressure (Paw, Pmean, Pplat, Ppeak, PEEP), I: E, Oxygen, CO2, N2O and halogenated expiratory concentration, Pressure, oxygen, CO2, N2O and Halogen numerical values, compliance and patient resistance	
TV (Inspiratory tidal volume)	0~3000 mL
TV (expiratory tidal volume)	0~3000 mL
MV (Per-minute ventilation amount)	0~100 L/min
FiO2 (Oxygen concentration)	18~100%
Paw (Airway pressure)	-20~120 cmH2O
PEEP	0~70 cmH2O
Ppeak (Airway pressure)	-20~120 cmH2O
Pmean (Mean pressure)	-20~120 cmH2O
Pplat (Platform pressure)	0~100 cmH2O
I.E. (Inspiratory-expiratory ratio)	4:1~1:12
RR	0~120 bpm
Compliance	0~300 mL/cmH2O
Resistance	0~600 cmH2O/(s/L)
EtCO2	
MASIMO EtCO2 (sidestream);	0~190mmHg, 0~25% (at 760mmHg) Accuracy: \pm (0.3%+4% of reading).
MASIMO EtCO2 (mainstream)	0~190mmHg, 0~25% (at 760mmHg) Accuracy: \pm (0.3%+4% of reading).
Respironics EtCO2 (sidestream);	0~150mmHg, 0~19.7% (at 760mmHg) Accuracy: 0~5.3%: \pm 0.3%; 5.4~9.2%: \pm 5% of reading; 9.3~13.2%: \pm 8% of reading; 13.3~19.7%: \pm 10% of reading;
Respironics EtCO2 (mainstream)	0~150mmHg, 0~19.7% (at 760mmHg) Accuracy: 0~5.3%: \pm 0.3%; 5.4~9.2%: \pm 5% of reading; 9.3~13.2%: \pm 8% of reading; 13.3~19.7%: \pm 10% of reading;
AG	
MASIMO AG	SEV: 0~25% DES: 0~25% HAL/ ISO/ ENF: 0~25% N2O: 0~100% O2: 0~100% CO2: 0~25% (0~190mmHg) Accuracy:

	SEV: $\pm 0.15\%$; 5% (Reading); DES: $\pm 0.15\%$; 5% (Reading); ISO, ENF, HAL: $\pm 0.15\%$; 5% (Reading); N2O: $\pm 2\% + 2\%$ (reading) O2: $\pm 1\%$; $\pm 2\%$ (reading) CO2: $0.2\% + 2\%$ (reading)
MASIMO AG	MASIMO AG SEV: 0~25% DES: 0~25% HAL/ ISO/ ENF: 0~25% N2O: 0~100% O2: 0~100% CO2: 0~25% (0~190mmHg)
Anesthesia depth	
BIS	0.0~100.0
SQI	0.0~100.0%
EMG	0.0~100.0dB
ESR	0.0~100.0%
Ventilator Performance	
Inlet Pressure range	280~600 kPa
Peak MV	100 L/min
Minute Volume	1~100 L/min
Inspiratory flow	Standard: Maximum inspiratory flow shall not be smaller than 80L/min when gas supply pressure is 280KPa. Optional: Maximum inspiratory flow shall not be smaller than 120L/min when gas supply pressure is 280KPa
Pressure limitation Controlling means for ventilator	Controlled by the electronic relief valve fitted inside the ventilator; Controlled by the mechanical relief valve fitted inside the ventilator.
Ventilator accuracy	
Control accuracy	
TV	15~60 ml: $\pm 15\text{ml}$; 60~1500 ml: $\pm 20\text{ml}$ or $\pm 10\%$ of setting value
PCV	Inspiratory pressure: $\pm 3\text{cmH}_2\text{O}$ or $\pm 8\%$ of setting value Limiting pressure: $\pm 4\text{cmH}_2\text{O}$ or $\pm 10\%$ of setting value PEEP: OFF; $3\text{cmH}_2\text{O} \sim 30\text{cmH}_2\text{O}$: $\pm 2.0\text{cmH}_2\text{O}$ or $\pm 10\%$ of setting value Supporting pressure: OFF; $3\text{cmH}_2\text{O} \sim 60\text{cmH}_2\text{O}$: $\pm 3.0\text{cmH}_2\text{O}$ or $\pm 8\%$ of setting value Apnea pressure: $\pm 3\text{cmH}_2\text{O}$ or $\pm 8\%$ of setting value, Trigger pressure: $\pm 1\%$
RR	$\pm 1\text{ bpm}$; $\pm 0.5\%$
I.E.	2: 1~1: 4: $\pm 10\%$; Other range: $\pm 25\%$ of the setting value
Apnea I.E.	2: 1~1: 4: $\pm 10\%$; Other range: $\pm 25\%$ of the setting value

Tpause	$\pm 15\%$ of the set value or $\pm 0.1\text{s}$ in the range of 20% to 60%
Inspiratory time	$\pm 0.2\text{s}$
Trigger window	$\pm 1\%$
Trigger flow rate	$\pm 1\text{ L/min}$
Inspiratory stop level	$\pm 1\%$
Pressure slope	$\pm 0.1\text{s}$
Inspiratory trigger	Trigger pressure: -5 CMH2O; Trigger flow: 0.1 L/Min
SIMV Rate	1 bpm
Monitoring accuracy	
TV (expiratory)	0~60ml(without 60ml): $\pm 15\text{ ml}$; 60ml ~ 3000ml: $\pm 20\text{ml}$ or $\pm 10\%$ of setting value, whichever is greater;
TV (Inspiratory)	$\pm 20\text{ml}$ or $\pm 10\%$ of setting value, whichever is greater;
Paw	$\pm 3\text{ cmH}_2\text{O}$ or $\pm 8\%$ of set value, whichever is greater; Others: undefined.
PEEP	$\pm 2.0\text{ cmH}_2\text{O}$ or $\pm 10\%$ of set value, whichever is greater; Others: undefined.
RR	$\pm 1\text{ bpm}$ or $\pm 5\%$ of set value, whichever is greater.
I.E.	2: 1~1: 4: $\pm 10\%$ of reading value; 4: 1~2: 1 and 1: 4~1: 12: $\pm 25\%$ of setting value; Others: undefined.
MV	0 L/min~30 L/min: $\pm 1\text{ L/min}$ or $\pm 15\%$ of set value, whichever is greater; >30 L/min: undefined.
Compliance	0 ml/cmH2O~250 ml/cmH2O
Resistance	0 cmH2O/(L/s) ~500 cmH2O/(L/s)
Alarm Settings	
Tidal volume	High: 5~1600 ml Low: 0 ~1595 ml
MV	High: 2~100L/min Low: 0 ~98L/min
FiO2	High: 20~105% Low: 18 ~ 103%
Air pressure	High: 2 ~100cmH2O Low: 0 ~98cmH2O
Apnea alarm	Two (2) triggering conditions are satisfied simultaneously: 1. Airway pressure is continuously lower than (PEEP +3) cmH2O for more than 30 seconds. 2. Expiratory tidal volume is continuously lower than 10ml for more than 30 seconds. Increase the set values of tidal volume and respiratory frequency, or set it to Manual/spontaneous mode.
Alarm	Audible and visual alarm; 120s

Alarm access	Easy access by shortcut
Flow meters	
Type	Mechanical flow meter
N2O range	0 ~10 L/min, The flow can be adjusted to 50ml/min
Air range	0 ~15 L/min, The flow can be adjusted to 50ml/min
O2 range	0 ~15 L/min, The flow can be adjusted to 50ml/min
Total flow control	Air balance gas: 21~100% N2O balance gas: 25~100%
Total flow range	0 ~15 L/min
Backup flow control	0 ~15 L/min
O2-N2O Link system	Equipped with a safety system to ensure an O2 concentration of at least 25%
Gas Supply	
Pipeline gasses	O2, N2O, Air
Backup gas-cylinder gasses	O2, N2O, Air
Pipeline gas connection	NIST/DISS
Backup cylinder connection	YOKE-CGA
Inlet pressure range	280~600 kPa
Filter	60-100μm, Stainless steel mesh
Features	Switch easily to the other gas without interrupting the ventilation
Auxiliary gas supply	Float flowmeter
	Standard: O2 supply Optional: Air, auxiliary gas supply
Breathing System Specification	
System Pressure Gauge	
Range	-20~100 cmH2O
Accuracy	± (4% of full scales reading + 4% of actual reading)
Adjustable Pressure Limiting (APL) valve	
Range	1~75 cmH2O
Touch indication	>30 cmH2O
Accuracy:	±10 cmH2O, ±15%, which is greater
Minimum opening pressure	0.3 cmH2O (dry), 0.5 cmH2O (humid)
Breathing Circuit Parameters	
Compliance	0 ml/cmH2O ~ 300 ml/cmH2O
Volume of CO2 canister	2000ml
Feature	Heated at 134 degree, removable, easy to dismantle and sterilize, 2000 times
Gas Monitoring	
Carbon Dioxide (CO2) Modules	
Type	Mainstream ETCO2, Sidestream

	ETCO2
Method	Infrared absorption
Display	Numeric and curve displayed in screen
BIS Modules	
Smoothing rate	10s, 15s, 30s
Waveform Sweep	6.25 mm/s, 12.5 mm/s, 25mm/s, 50mm/s
Wave gear	50 μV、100 μV、200 μV、400 μV、625 μV、1000 μV/2000 μV
Anesthetic Agent (AG) Module	
Maximum sound pressure for low alarm	79dB
Measurement type	Side stream
Accuracy	±10ml/min or ±10%, whichever is greater
Monitored parameters	CO2, N2O, AG+O2, MAC, AG and Paramagnetic O2
Active AGSS	
Feature	High flow, low vacuum
Size	535 mm×120 mm×155 mm
Weight	2.2 kg
Applies	ISO 80601-2-13 and YY 0635-2
Pressure relief device	Atmospheric pressure compensation port
Connector	ISO9170-2 or BS6834 standard connector
Flow of suction	AGSS-H:50-80L/min; AGSS-L:25-50L/min
Filter	Stainless steel mesh, with pore size of 60~100μm
ACGO	
Connector	Taper coaxial fitting of 22mm (outside) and 15 (inside)
Back pressure generated at the rear end of anesthesia vaporizer and the front-end of ACGO during rapid oxygen variation	≤2kPa
Flush O2	
	25-75L/MIN
	100% fast oxygen
Vaporizer	
Brand	Comen/Drager/Penlon available
Single vaporizer	Standard
Double vaporizer	Optional
Locking	Two vaporizers with interlocking system

Automatic recognition	Anesthesia machine able to automatic recognize halogenated gases
Power	
External AC power supply	
Input voltage	100~240 V~
Input current	7.0-3.5A
Input frequency	50/60 Hz

Leakage current	< 500μA
Length of wire	5M
Auxiliary output supply	
Output voltage	100~240 V~
Output frequency	50/60 Hz
Output current	1.0 A

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