Specification: AX400

2021 V 2.2

Anesthesia Machine

AX400

Technical Specification

Physical Characteristics

Size	773.5mm×1380mm×598mm
Weight	90kg
Entire Machine Maximum Bearing Weight	160kg
Screen Size:	8.4” TFT touch screen
Resolution	800 × 600
Handrail Length	412mm
Caster wheel	4 wheels 5” brakes;

Operation Environment

Working Temp	10~40°C
Humidity	≤93%
Power Supply	100-240V~, 50/60Hz±1Hz
Battery Type	Rechargeable Lithium-ion battery
Battery Capacity	4400mAh, 11.1VDC
Battery Recharging Time	4 hours for charging
Battery backup	2 hours for continuous working
Trace	Waveforms: Pressure-time; Flow rate-time; Capacity-time; ET EtCO2 concentration Optional: Pressure-volume Loops; Flow-volume Loops; Pressure- flow Loops

Top Plate

Maximum supporting capacity	50kg
Operational dimensions	535mm×235mm
Dimensions with Additional Accessory	508mm×313mm×380mm

Workbench

Maximum supporting capacity	20kg
Operational dimensions	465mm×275mm
Dimensions with Additional Accessory	472mm×248mm×380mm

Interface:

USB port
RJ45
3 auxiliary power output
AC power interface
Equal-potential grounding terminal
DB9 interface

Features

Drawers:	Size: 416mm×395mm×170mm Bearing Weight: 1Kg
Gas-bag Sway Brace:	Length: 320mm; Height: 240mm
Anesthesia process	Open, semi closed, closed circuit
Patients	Adult, pediatric
Mode	Manual, Mechanical, Standby
Compliance	Compliance Correction
Configuration	Possibility of configuration observation
Optional	Bypass; Heating; Oxygen sensor; ACGO; AGSS; BIS; CPB; MASIMO EtCO2 (sidestream); MASIMO EtCO2 (mainstream); MASIMO AG (sidestream); Respironics EtCO2 (mainstream);

Ventilator Specification

Ventilation Modes

VCV/VC	Volume-Controlled Ventilation with tidal volume compensation
Others	Manual and automatic ventilation

Optional	PCV/VPC, SIMV-VC, PSV/ CPAP, SIMV-PC, PRVC, SIMV-PRVC, PSVPro
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

Monitoring parameter	Tidal volume, Inspiratory, expiratory flow, minute volume, frequency, pressure (Pmean, Pplat, Ppeak, PEEP), Oxygen, CO2, N2O and halogenated expiratory concentration, Pressure, oxygen, CO2, N2O and Halogen numerical values, compliance and patient resistance
Tidal volume range	15 ~1500 mL
MV (Per-minute ventilation amount)	0~100 L/min
Pressure range (limit)	10~100 cmH2O
Pressure range (support)	3~60cmH2O
Respiratory rate	4~100bpm
Inspiratory /Expiratory ratio (I: E) range	4:1~1:10
Apnea I: E	4:1~1:8
Apnea time	10~30s
Apnea pressure	3~60cmH2O
Freq. Min. (Min. frequency for apnea-ventilation)	2-60 bpm
Inspiratory pause	OFF, 5~60% of inspiratory time
Inspiratory time	0.2~5s
Inspiratory pressure	5~70cmH2O
PEEP	OFF, 3~30cmH2O
Trigger pressure	-20~-1cmH2O
Trigger window	5~90%
Trigger flow	0.2~15 L/ min
Flush oxygen	25~75 L/ min
Inspiratory stop level	5~80%
Pressure slope	0~2.0s

Ventilator Monitoring Ranges

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%
Airway pressure	-20~120cmH_2O
PEEP	0~70cmH_2O
Ppeak (Airway pressure)	-20~120 cmH_2O
Pmean (Mean pressure)	-20~120cmH_2O
Pplat (Platform pressure)	0~120cmH_2O
I: E (Inspiratory-expiratory ratio)	4:1~1:12
Freq (Respiratory rate)	0~120 bpm
Compl (Compliance)	0~300 mL/cmH_2O
Resistance	0~600 cmH_2O/(s/L)

EtCO2

MASIMO EtCO2 (sidestream);	0~190mmHg, 0~25% (at 760mmHg) Accuracy: ± (0.3%+4% of reading).
MASIMO EtCO2 (mainstream)	0~190mmHg, 0~25% (at 760mmHg) Accuracy: ± (0.3%+4% of reading).
Respironics EtCO2 (mainstream)	0~150mmHg, 0~19.7% (at 760mmHg) Accuracy: 0~5.3%: ±0.3%. 5.4~9.2%: ±5% of reading. 9.3~13.2%: ±8% of reading. 13.3~19.7%: ±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: 0~1%: ± 0.15%; 1~5%: ±0.2%; 5~8%: ±0.4%;

	DES: 0~1%: ± 0.15%; 1~5%: ±0.2%; 5~10%: ±0.4%;10~15%: ± 0.6%; 15~18%: ±1%; ISO, ENF, HAL: 0~1%: ±0.15%; 1~5vol %: ±0.2%; N2O: ± (2% + 2% of the reading) O2: 0~25%: ±1%; 25~80%: ±2%; 80~100%: ±3%; CO2: 0~15%: ± (0.2% + 2% of the reading); 15~25%: unspecified

Anesthesia depth

BIS	0.0~100.0
SQI	0.0~100.0%
EMG	0~100dB
ESR	0.0~100.0%

Ventilator Performance

Pressure range at inlet	0.28~0.6 MPa
Peak gas flow	>100 L/min
Flow valve range	1~100 L/min
Flow compensation range	200 mL/min to 18 L/min
Inspiratory flow	Maximum inspiratory flow shall not be smaller than 120L/min when gas supply pressure is 280KPa.
Range of flow valve	3~100 L/min
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: ±10ml. 60~210 ml: ±15ml. 210~1500 ml: ±7% of set value.
PCV	Inspiratory pressure: ±2.5cmH2O or ±7% of set value, whichever the greater. Limiting pressure: ±2.5cmH2O or ±7% of set value, whichever the greater. PEEP: OFF: undefined; 3~30cmH2O: ±2.0cmH2O, or ±8% of set value, whichever is the greater. Supporting pressure: ±2.5cmH2O or ±7% of set value, whichever the greater. Apnea pressure: ±2.5cmH2O or ±7% of set value, whichever the greater. Trigger pressure: ±2.0cmH2O.
Freq	±1 bpm or ±5% of set value, whichever is the greater.
I: E	2: 1~1: 4: ±10% of reading value; Other ranges: ±25% of reading value.
Apnea I: E	2: 1~1: 4: ±10% of set value; Other ranges: ±25% of set value.
Tpause	In the range of 20%~60%: ±15% of set value; Other ranges: undefined.
Inspiratory time	±0.2s
Inspiratory pause	20%~60%: ±15% of set value; Other ranges: undefined.
Trigger window	±10%
Trigger flow rate	±1 L/ min
Inspiratory stop level	±10%
O2/ N2O/ Air flow control	10~100% of the full scale: ±10% of the reading value. Other ranges: undefined.
Total flow control	Air balance gas: ≤±3% N2O balance gas: ≤±3%
Backup flow control	Pure Oxygen flow rate is 0~10 L/min: ≤±3%; Others: undefined.
Auxiliary flow control	10~100% of the full scale: ±10% of the reading value. Other ranges: undefined.

Monitoring accuracy

TV (expiratory)	0~60ml: ±10 ml; 60ml ~ 3000ml: ± 20ml or ± 7% of reading value, whichever is greater; Others: undefined.
TV (Inspiratory)	60ml ~ 3000ml: ± 20ml or ± 7% of reading value, whichever is greater; Others: undefined.
Paw	-20 cmH2O~120 cmH2O: ±2.0 cmH2O or ± 4% of set value, whichever is greater; Others: undefined.

PEEP	0 cmH2O~70 cmH2O: ±2.0 cmH2O or ± 4% of set value, whichever is greater; Others: undefined.
Pmean	-20 cmH2O~120 cmH2O: ±2.0 cmH2O or ± 4% of setting value, whichever is greater. Others: undefined.
Pplat	0 cmH2O~120 cmH2O: ±2.0 cmH2O or ± 4% of set value, whichever is greater; Others: undefined.
Freq	±1 bpm or ±5% of set value, whichever is the greater.
I: E	2: 1~1: 4: ±10% of reading value. 4: 1~2: 1 and 1: 4~1: 12: ±25% of setting value; Others: undefined.
MV	0 L/min~30 L/min: ±1 L/min or ±15% of set value, whichever is greater; Others: undefined.
Compliance	0 ml/cmH2O~250 ml/cmH2O: ±0.5 ml/cmH2O or ± 15% of reading value, whichever is greater. Other ranges: undefined.
Resistance	0 cmH2O/(L/s)~20 cmH2O/(L/s): ± 10 cmH2O/(L/s)；20 cmH2O/(L/s)~500 cmH2O/(L/s)：± 50% of reading value; Other ranges: undefined.
Oxygen sensor	±3%
O2/ N2O/ Air flow control	10~100% of the full scale: ±10% of the reading value. Other ranges: undefined.
Total flow control	Air balance gas: ≤±3% N2O balance gas: ≤±3%
Backup flow control	Pure Oxygen flow rate is 0~10 L/min: ≤±3%; Others: undefined.
Auxiliary flow control	10~100% of the full scale: ±10% of the reading value. Other ranges: undefined.

Alarm Settings

Tidal volume (expiratory)	High: 5~1600 ml Low: 0 ~1595 ml
MV	High: 2~100L/min Low: 0 ~98L/min
Inspired oxygen	High: 20~105% Low: 18 ~ 103%
Ppeak	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;
Alarm access	Easy access by shortcut

Flow meters

Type	Mechanical flow meter
N2O range	0 ~10 L/min
Air range	0 ~10 L/min
O2 range	0.2 ~10 L/min
Total flow control	Air balance gas: 21~100% N2O balance gas: 25~100%

Gas Supply

Pipeline gasses	O2
Optional	O2, Air; O2, N2O; O2, N2O, Air
Backup gas-cylinder gasses	O2, N2O, Air
Pipeline gas connection	NIST
Backup cylinder connection	YOKE-CGA
Pressure range at inlet	280~600 kPa
Filter	60-80um
Features	Switch easily to the other gas without interrupting the ventilation
Auxiliary gas supply	O2(optional)

Breathing Circuit Specification

System Pressure Gauge

Range	-20~100 cmH2O

Accuracy	± (4% of full scales reading + 4% of reading)

Adjustable Pressure Limiting (APL)valve

Range	1~75 cmH2O
Tactile knob indication at	>30 cmH2O
Accuracy:	±1.0 cmH2O
Minimum opening pressure	0.3 cmH2O (dry), 0.5 cmH2O (humid)

Breathing Circuit Parameters

Compliance	≤4mL/100Pa
	Automatically compensates for compression loss within the breathing circuit in mechanical mode
Volume of CO2 canister	2000ml
Water Trap	7mL, easy to be disassembled
Feature	Heated at 134 degree, removable, easy to dismantle and sterilize

Gas Monitoring

Carbon Dioxide (CO2) Modules

Type	Mainstream ETCO2, Sidestream ETCO2
Method	Infrared absorption
Display	Numeric and curve displayed in screen
Alarm delay	1~10s (step size: 1s)
Sweep	6.25 mm/s,12.5 mm/s

Anesthetic Agent (AG) Module

Maximum sound pressure for low alarm	79dB
Measurement type	Side stream
Module type	Phasin ISA AG module
Accuracy	±10ml/min or ±10%, whichever is greater
Monitored parameters	CO2, N2O, AA, MAC, Paramagnetic O2 and BIS

Active AGSS

Feature	High flow, low vacuum
Size	535mm×120mm×155mm
Weight	2.2kg
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	50-80L/min
Resistance	0.75KPa ,75L/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 quick oxygen charging	≦2kPa

Flush O2

100% fast oxygen

Vaporizer

Brand	Drager and Penlon available
Locking	Vaporizer with interlocking system (Optional: Two vaporizers)
Automatic recognition	Anesthesia machine able to automatic recognize halogenated gases

Power (No isolation transformer)

External AC power supply

Input voltage	100~240 V~/ 100~120V~
Input current	3.5~8.5 A/8.5 A
Input frequency	50/60 Hz
Leakage current	< 500μA

Auxiliary output supply

Output voltage	100~240 V~/ 100~120V~
Output frequency	50/60 Hz

Shipment (Freight)

Package size	1230*930*1610 mm
Gross Weight	181.5 kg