

ATESE
HEALTHCARE



**ATESE ACESO ADVANCE
HIGH-END ANESTHESIA MACHINE**

ACESO ADVANCE

ANESTHESIA MACHINE



Technical Specifications

Physical Characteristics

Size	689 mm × 800 mm × 1400 mm
Weight	128kg
Maximum Bearing	
Weight	210kg
Screen Size:	15" + 8" TFT touch screen
Resolution	1024 × 768
Handrail Length	750mm
Caster wheel	4 wheels, central baking; brakes optional; size 5"

Operation Environment

Working Temp	10~40°C
Humidity	≤93%
Power Supply	100-240V~, 50/60Hz±1Hz
Battery Type	Rechargeable Lithium-ion battery
Battery Capacity	7000 mAh, 11.1VDC
Battery Recharging	
Time	6 hours for charging;
Battery backup Trace	3 hours for continuous working
	Waveforms: Pressure-time; Flow rate-time; Capacity-time; ET
	EtCO2 concentration
	Loops: Pressure-volume; Flow-volume; Pressure- flow

Top Plate

Maximum supporting capacity	20kg
Operational dimensions	508mm×313mm
Dimensions with Additional Accessory	508mm×313mm×380mm

Workbench

Maximum supporting capacity	20kg
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Interface:

2 USB interfaces
RJ45 network interface
4 auxiliary power output
AC power interface
Equal-potential grounding terminal
DB9 interface
VGA interface

Drawers

Top:	Size:462mm×287mm×141mm Bearing Weight: 1Kg
Bottom:	Size: 437mm×287mm×245mm Bearing Weight: 3Kg

Gas-bag Sway Brace

Length:	425mm
Height:	240mm

Features

Anesthesia process	Open, semi closed, closed circuit
Patients	Adult, pediatric
Working Mode	Manual, Mechanical, Standby
Compliance	Compliance Correction
Configuration	Possibility of configuration observation
Heating	Available
Bypass	Available

Oxygen sensor	Available
Optional	Negative pressure drainage; Isolation transformer; AGSS; BIS; MASIMO EtCO ₂ (sidestream); MASIMO EtCO ₂ (mainstream); MASIMO AG (sidestream); Respirationics EtCO ₂ (mainstream); Respirationics EtCO ₂ (Sidestream); MASIMO AG+O ₂ (sidestream); Artema AG; Artema AG+O ₂ ; Optimal flow indication; Anesthetic usage monitoring; CPB

Tpause (Inspiratory pause)	OFF, 5~60% of inspiratory time
T _{insp} (Inspiratory time)	0.2~5s
P _{insp} (Inspiratory pressure)	5~70 cmH ₂ O
PEEP	OFF, 3~30 cmH ₂ O
Trigger pressure	-20~-1 cmH ₂ O
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%
T _{slope} (Pressure slope)	0~2.0s

Ventilator Specifications

Ventilation Modes

VCV/VC	Volume-Controlled Ventilation with tidal volume compensation
PCV/VPC	Pressure Control Ventilation
SIMV-VC, SIMV-PC	Synchronized Intermittent Mandatory Ventilation
PRVC	Pressure Regulated Volume Control
PSV/ CPAP	Pressure Support Ventilation
Others	Manual and automatic ventilation
Optional	SIMV-PRVC, PSV Pro
Ventilation principle	Chronometric, volumetric and barometric
Ventilation	Electronically controlled & pneumatically driven
Driven gas	Electronic selective air or O ₂
Breathing circuit volume	1000 ml + bag

Ventilator Setting ranges

Tidal volume range	15 ~1500 mL
MV (Per-minute ventilation amount)	0~100 L/min
P _{limit} (pressure)	10~100 cmH ₂ O
PPS (pressure support level)	3~60 cmH ₂ O
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 cmH ₂ O
Freq. Min. (Min. frequency for apnea-ventilation)	2-60 bpm

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
FiO ₂ (Oxygen concentration)	18~100%
P _{aw} (Airway pressure)	-20~120 cmH ₂ O
PEEP	0~70 cmH ₂ O
P _{peak} (Airway pressure)	-20~120 cmH ₂ O
P _{mean} (Mean pressure)	-20~120 cmH ₂ O
P _{plat} (Platform pressure)	0~120 cmH ₂ O
I.E. (Inspiratory-expiratory ratio)	4:1~1:12
Rate (Respiratory rate)	0~120 bpm
Compliance	0~300 mL/cmH ₂ O
Resistance	0~600 cmH ₂ O/(s/L)
EtCO₂	
MASIMO EtCO ₂ (sidestream);	0~190mmHg, 0~25% (at 760mmHg) Accuracy: ± (0.3%+4% of reading).
MASIMO EtCO ₂ (mainstream)	0~190mmHg, 0~25% (at 760mmHg) Accuracy: ± (0.3%+4% of reading).

Respironics EtCO ₂ (sidestream);	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;
Respironics EtCO ₂ (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% N ₂ O: 0~100% O ₂ : 0~100% CO ₂ : 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%; N ₂ O: ± (2% + 2% of the reading) O ₂ : 0~25%: ±1%; 25~80%: ±2%; 80~100%: ±3%; CO ₂ : 0~15%: ± (0.2% + 2% of the reading); 15~25%: unspecified
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Artema AG	SEV: 0~8% DES: 0~18% HAL/ ISO/ ENF: 0~5% N ₂ O: 0~100% O ₂ : 0~100% CO ₂ : 0~10%
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Anesthesia depth

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

Ventilator Performance

Inlet Pressure range	0.28~0.6 MPa
Peak gas flow	>100 L/min
Flow valve range	1~100 L/min

Flow compensation rage	200 mL/min to 18 L/min
Inspiratory flow	Maximum inspiratory flow shall not be smaller than 100L/min when gas supply pressure is 280KPa.
Pressure limitation	Controlled by the electronic relief valve fitted inside the ventilator;
Controlling means for 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: ±2.5cmH ₂ O or ±7% of set value, whichever is greater. Limiting pressure: ±2.5cmH ₂ O or ±7% of set value, whichever is greater. PEEP: OFF: undefined; 3~30cmH ₂ O: ±2.0cmH ₂ O, or ±8% of set value, whichever is the greater. Supporting pressure: ±2.5cmH ₂ O or ±7% of set value, whichever is greater. Apnea pressure: ±2.5cmH ₂ O or ±7% of set value, whichever is greater. Trigger pressure: ±2.0cmH ₂ O.
Rate	±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.
T _{pause}	In the range of 20%~60%: ±15% of set value; Other ranges: undefined.
Inspiratory time	±0.2s
Inspiratory pause	±15% of set value;
Trigger window	±10%
Trigger flow rate	±1 L/ min
Inspiratory stop level	±10%
O ₂ / N ₂ O/ Air flow control	10~100% of the full scale: ±10% of the reading value.

Total flow control	Air balance gas: $\leq \pm 3\%$ N2O balance gas: $\leq \pm 3\%$
Backup flow control	Pure Oxygen flow rate is 0~10 L/min: $\leq \pm 10\%$; Others: undefined.
Auxiliary flow control	10~100% of the full scale: $\pm 10\%$ of the reading value. Other ranges: undefined.

Monitoring accuracy

TV (expiratory)	0~60ml: ± 10 ml; 60ml ~ 3000ml: ± 20 ml or $\pm 7\%$ of reading value, whichever is greater; Others: undefined.
TV (Inspiratory)	60ml ~ 3000ml: ± 20 ml or $\pm 7\%$ of reading value, whichever is greater; Others: undefined.
Paw	-20 cmH2O~120 cmH2O: ± 2.0 cmH2O or $\pm 4\%$ of set value, whichever is greater; Others: undefined.
PEEP	0 cmH2O~70 cmH2O: ± 2.0 cmH2O or $\pm 4\%$ of set value, whichever is greater; Others: undefined.
Pmean	-20 cmH2O~120 cmH2O: ± 2.0 cmH2O or $\pm 4\%$ of setting value, whichever is greater; Others: undefined.
Pplat	0 cmH2O~120 cmH2O: ± 2.0 cmH2O or $\pm 4\%$ of set value, whichever is greater; Others: undefined.
Rate	± 1 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: ± 1 L/min or $\pm 15\%$ of set value, whichever is greater; >30 L/min: undefined.
Compliance	0 ml/cmH2O~250 ml/cmH2O: ± 0.5 ml/cmH2O or $\pm 15\%$ 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): $\pm 50\%$ of reading value; Other ranges: undefined.
Oxygen sensor	$\pm 3\%$

O2/ N2O/ Air flow control	10~100% of the full scale: $\pm 10\%$ of the reading value. Other ranges: undefined.
Total flow control	Air balance gas: $\leq \pm 3\%$ N2O balance gas: $\leq \pm 3\%$
Backup flow control	Pure Oxygen flow rate is 0~10 L/min: $\leq \pm 3\%$; Others: undefined.
Auxiliary flow control	10~100% of the full scale: $\pm 10\%$ of the reading value. Other ranges: undefined.

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%
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	Electronic flow meter
N2O range	0 ~15 L/min
Air range	0 ~15 L/min
O2 range	0.2 ~15 L/min
Total flow control	Air balance gas: 21~100% N2O balance gas: 25~100%
Total flow range	0.2 ~18 L/min
Backup flow control	0 ~15 L/min
Proportional device	Equipped with a safety system to ensure an O2 concentration of at least 25%

Gas Supply

Pipeline gasses	O2, N2O, Air
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Backup gas-cylinder gasses	O ₂ , N ₂ O, Air
Pipeline gas connection	NIST
Backup cylinder connection	YOKE-CGA
Inlet pressure range	280~600 kPa
Filter	60-80µm
Features	Switch easily to the other gas without interrupting the ventilation
Auxiliary gas supply	O ₂ & O ₂ , Air mixture gas

Breathing System Specification

System Pressure Gauge

Range	-20~100 cmH ₂ O
Accuracy	± (4% of full scales reading + 4% of actual reading)

Adjustable Pressure Limiting (APL) valve

Range	1~75 cmH ₂ O
Tactile knob indication at	>30 cmH ₂ O
Accuracy:	±1.0 cmH ₂ O
Minimum opening pressure	0.3 cmH ₂ O (dry), 0.5 cmH ₂ O (humid)

Breathing Circuit Parameters

Compliance	≤4mL/100Pa Automatically compensates for compression loss within the breathing circuit in mechanical mode
Volume of CO ₂ canister	2000ml
Feature	Heated at 134 degree, removable, easy to dismantle and sterilize

Gas Monitoring

Carbon Dioxide (CO₂) Modules

Type	Mainstream ETCO ₂ , Sidestream ETCO ₂
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	CO ₂ , N ₂ O, AA, MAC, Paramagnetic O ₂ and BIS

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	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

Locking	Two vaporizers with interlocking system
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~
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Output frequency 50/60 Hz

Input frequency 50/60 Hz

Leakage current < 500 μ A

Power (No isolation transformer)

Auxiliary output supply

External AC power supply

Input voltage 100~120 V~/ 220~240V~

Output voltage 100~120 V~/ 220~240V~

Input current 3.5 A/8.5 A

Output frequency 50/60 Hz

***Notice: Specifications subject to changes without prior notice. All rights reserved by ATESE**



www.atese.com.tr

İvedik OSB Mahallesi, 1435. Cadde, No: 37, Yenimahalle/ Ankara - TÜRKİYE

Tel: +90.312 394 45 67 (pbx) • Fax: +90.312 394 45 90

www.atese.com.tr • atese@atese.com.tr

atesemedical@hotmail.com.tr