Dameca AX500 anaesthesia machine

Technical Data Sheet

The Dameca AX500 is an anaesthesia solution created as a direct response to your challenges, workflows, and clinical and operational objectives. Designed with you and your patients in mind, this innovative system helps you deliver superior anaesthesia and perioperative care.

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Dameca

TECHNICAL DATA

GENERAL

General	
Height	1397 mm (55 inches)
Width	810 mm / 920 mm (31.88 inches / 36.22 inches) incl. IBS
Depth	750 mm (29.52 inches)
Weight	Approx. 150 kg (330.69 lb) in a standard configuration which includes IBS, absorber and integrated patient suction
Wheel size	Ø 125 mm
Mechanical specifications	
Maximum load on table's side rail	20 kg
Maximum torque on table's side rail	20 Nm
Maximum load on table top	20 kg
Maximum load on pull-out plate	5 kg
Maximum load on top shelf	30 kg
Maximum load on drawer	5 kg
Electrical	
Class	I
Type	B
Power supply voltage	100V-127V, 220V-240V, 50/60 Hz
Power consumption *	130 VA + 20 VA (multigas module) + DES vaporizer. *Desflurane vaporizer power consumption depends on manufacturer and is not included in the power consumption specification.
Battery capacity	7.2 Ah
Battery backup time	Approx. 90 min
Battery type	2 pcs. Lead-Acid, 7.2 Ah
Battery charge time	Approx. 12 hours
Auxiliary electrical outlets and vaporizer outlets (optional)	
Max current from each individual outlet	One power outlet at the rear of the machine supports 2A @220V-240V or 3A @100V-127V Two power outlets at rear on the machine support 1A @220V-240V or 2A @100V-127V
Max total current from 3 outlets on the rear of the machine	Max. combined current @100V-127V = 11A @220V-240V =5.5A
100V - 127V Circuit breaker rating	Vaporizer outlet: 2.5A
	Rear outlet - top: 3A
	Rear outlet - middle: 2A
	Rear outlet - bottom: 2A
	Common for all 4 outlet above: 10A
100V - 127V On-board fuse rating	Vaporizer outlet: T 8A H 250V
	Rear outlet - top: T 10A H 250V
	Rear outlet - middle: T 6.3A H 250
	Rear outlet - bottom: T 6.3A H 250
	Common for all 4 outlet above: T 16A H 250

220V - 240V Circuit breaker rating	Vaporizer outlet: 2.5A
	Rear outlet - top: 2A
	Rear outlet - middle: 1A
	Rear outlet - bottom: 1A
	Common for all 4 outlet above: 6A
220V - 240V On-board fuse rating	Vaporizer outlet: T 8A H 250
	Rear outlet - top: T 6.3A H 250
	Rear outlet - middle: T 3.5A H 250
	Rear outlet - bottom: T 3.5A H 250
	Common for all 4 outlets above: T 10A H 250
Frequency from each outlet	Equal to supply frequency
SERVICE LIFE	
10 years	
COMMUNICATION PORTS	
D-Com port (isolated)	Data output according to protocol, for data collection. Data output according to Philips IntelliBridge protocol, for data collection.
USB (not isolated)	Used for printable reports, diagnostics & SW load
SCREEN	
15 " TFT display	Display resolution 1024 x 768

GASES

CENTRAL GAS SUPPLY / WALL SUPPLY	
Inlet pressure	300-600 kPa, 44-87 psig for O_2, Air and N_2O
RESERVE GAS SUPPLY (OPTIONAL)	
Pin-index yokes	ø100, ø109 and ø120 cylinders (O_2, Air and N_2O)
GAS CYLINDER SUPPLY	
Gas cylinder	0-25000 kPa, 0-3626 psig for O_2 and Air 0-10000 kPa, 0-1450 psig for N_2O
AUXILIARY GAS OUTLET	
Flow for O_2 or Air (measured at inlet pressure)	15 L/min at 400 kPa, 58 psig (60 L/min at 1013 hPa) 14 L/min at 600 kPa, 87 psig (85 L/min at 1013 hPa) 13 L/min at 1200 kPa, 174 psig (155 L/min at 1013 hPa)
GAS ALARM	
Alarm start pressure	<300 kPa, 44 psi for O_2, Air and N_2O
INTEGRATED AUXILIARY O_2 BALL FLOW METER	
Flow range	0–12 L/min
Accuracy	7.5% actual flow + 2.5% full scale
INTEGRATED PATIENT SUCTION	
Maximum vacuum	-70 kPa, -525 mmHg Gas driven: at minimum 400 kPa, 58 psig inlet pressure VAC driven: at minimum -80 kPa, from wall supply
Maximum suction flow	>25 L/min
Gas consumption (gas driven suction)	-25 kPa, -185 mmHg: Max. 15 L/min -50 kPa, -375 mmHg: Max. 22 L/min -70 kPa, -525 mmHg: Max. 27 L/min
ANAESTHESIA GAS SCAVENGING SYSTEM - AGSS	
Scavenging flow from the hospital installation (for a Dameca AX500 machine with passive AGSS)	28-40 L/min

FRESH GAS FLOW

SET PARAMETERS	
Flow resolution (all gases)	0.1 L/min
Flow range (Air, O_2)	0 - 15 L/min (inlet pressure >400 kPa)
Flow range (Air, O_2 , N_2O)	0 - 10 L/min (inlet pressure <400 kPa)
Accuracy (all gases)	4% of reading + 0.05 L/min
O_2 FLUSH VALVE	
Flow	30 ± 5 L/min
PRESSURE LIMITING	
Max pressure (MPL valve)	<125 hPa

VENTILATOR

DRIVE GAS (AIR OR O_2)	
Pressure	Min. 300 kPa, 43.5 psig at 80 L/min
Maximum consumption (Peak flow)	120 L/min
Mean consumption	Max. 80 L/min at 280 kPa, 40.6 psig
PRESSURE RANGE	
Pressure limitation, opening pressure (P. lim max.)	< 125 hPa (mechanical, pressure limitation value)
Max. adjustable working pressure	Approx. 80 hPa
High-pressure alarm	10 to 80 hPa
Min. expiration pressure (P. lim min)	1 hPa
Cycling pressure	1-80 hPa
NPL valve opening pressure	11 hPa ±5 hPa
SET PARAMETERS	
Tidal volume	20 to 1500 mL
Delivered tidal volume accuracy (VCV and SIMV mode)	**Without patient sensor** < 400 mL: +/- 15 mL or +/- 12% of setting (whichever is greater) 400 – 1500 mL: +/- 50 mL or +/- 10% of setting (whichever is greater)
	With patient sensor Paediatric sensor: +/- 10 mL or +/- 10% of setting (whichever is greater) Adult sensor: +/- 50 mL or +/- 10% of setting (whichever is greater)
Respiration rate	4 to 80 resp./min
I:E ratio	3:1 to 1:9.9
PEEP	OFF, 4 to 20 hPa
Inspiratory pressure	4 to 67 hPa
Inspiratory pause	0 to 70%
Ventilation modes (controlled)	VCV, SIMV, PCV, PSV, PRVT, VSV
PCV MEASUREMENTS	
In PCV mode	Delivery of TV ≥ 5 ml is possible
SIMV SETTINGS	
SIMV trigger point	-0.5 to -10.0 hPa
PSV/VSV SETTINGS	
Support pressure (PSV only)	4 to 50 hPa
Inspiratory trigger	1 to 10 L/min
Expiratory trigger	10 to 80%
PSV/VSV backup time	10 to 40 sec.

Airway pressure monitor	
Measured parameters	Peak, Plateau, Mean, PEEP, Compliance
Pressure range	-10 to 99 hPa
Accuracy	± 2 hPa
Volume monitor (optional)	
Measurement range, paediatric sensor	0 to 500 mL
Measurement range, adult sensor	0 to 2000 mL
Accuracy, paediatric sensor	<100 mL: ± 10 mL 100 to 300 mL: ± 10% of reading
Accuracy, adult sensor	200 to 500 mL: ± 50 mL 500 to 2000 mL: ± 10% of reading
High expired minute volume alarm	0.1 to 80.0 L and OFF
Low expired minute volume alarm	0.1 to 79.9 L and OFF

INTEGRATED BREATHING SYSTEM (IBS)

Dimensions	
Size (H x W x D)	335 x 200 x 275mm (13.18 inches x 7.87 inches x 10.82 inches) (incl. APL and bellows chamber)
Weight	4 kg (8.8lb) (complete system excl. i-SORB CO_2 absorber)
Total volume	1 L with a filled absorber canister. The volume from the patient hoses (typically 0.5 L) should be added. During manual ventilation, the volume from the respiration bag and the connecting hoses should be added. During automatic ventilation, the 1.5 L volume from the bellows should be added.
APL valve	
Setting	SP, 5 to 75 hPa
Accuracy	± 7 hPa at 4 L/min
i-SORB CO_2 absorber (reusable & disposable)	
Capacity	Approx. 880g (1.94 lb.) soda lime
Volume (empty)	1420 mL
Material specification for sodalime	SofnoLime: 3 % sodium hydroxide by weight > 75 % calcium hydroxide by weight White or coloured solid, pH value 12 – 14

GAS MEASUREMENTS

External O_2 fuel-cell sensor (optional)

O_2% fuel-cell sensor (optional)	
Measurement range	0 to 100% O_2 (v/v)
Accuracy	± 2% (v/v) at constant temperature, and pressure
High O_2% alarm	19 to 99% and OFF
Low O_2% alarm	18 to 100%
Sensor lifetime	More than 500,000 O_2% hours under normal conditions (equivalent to 33 months when placed in 25°C air)
Cross-gas interference	Less than 1.25% O_2 response to anaesthetic agents
Drift	Less than 1% O_2 over 24 hours
Rise time	Less than 10.5 sec for 90% of final value
System response time	Less than 17 sec.

High altitudes calibration	The O_2 fuel-cell sensor is not equipped with automatic barometric pressure compensation, therefore requires re-calibration when installed at high altitudes

Integrated multigas module (optional)

Correction	
Barometric pressure, samplegas pressure, temperature and full spectral interference correction	
Warm-up time	
Time needed to reach ISO accuracy specifications	45 sec. after powering up
Time needed to reach "full accuracy" specifications	2 min after powering up
ISO specifications	As "full accuracy" specs, but derated as follows: CO_2 Add ± 0.3% CO_2 AA: Add ± 8% of reading N_2O: Add ± (2% N_2O + 8% of actual reading)
Water trap	
Capacity	10 mL (Adult) / 6 mL (Neonatal)
Emptying interval (Half full, worst case)	Adult: 17 h @ 200 mL/min, 37°C, 100% RH Neonatal: 20 h @ 120 mL/min, 37°C, 100% RH
Sample flow	
Platinum multigas module	200 mL/min with adult water trap installed (+/-10%) 70 mL/min with neonatal water trap installed (+/-10mL/min)
Argentum multigas module	120 mL/min (+/-10%)
Measured parameters	
Insp. O_2%	0 to 100% Resolution: 1%
Exp. O_2%	0 to 100% Resolution: 1%
Insp. N_2O%	0 to 100% Resolution: 1%
Exp. N_2O%	0 to 100% Resolution: 1%
Insp. CO_2	0 to 100% Resolution: 0.1%
Exp. CO_2	0 to 100% Resolution: 0.1%
Insp. AA%	HAL, ENF, ISO: 0 to 7.5% SEV: 0 to 9% DES: 0 to 20% Resolution: 0.1%
Exp. AA%	HAL, ENF, ISO: 0 to 7.5% SEV: 0 to 9% DES: 0 to 20% Resolution: 0.1%
Resp. Rate	0 to 100 resp./min
Calculated parameters	
MAC	0 to 10. Resolution: 0.1
Resp. rate measurement accuracy	
Resp. Rate 0 to 60 resp./min	± 1 resp./min
Resp. Rate >60 resp./min	Not specified
Resp. Rate detection	CO_2 variation in measured CO_2
Gas measurement, typical response time 10–90% (Adult water trap and sample line)	
O_2	1000 msec.
N_2O	650 msec.
CO_2	450 msec.
AA	450 msec. (once the agent has been identified)
Gas measurement, typical response time 10–90% (Neonatal water trap and sample line)	

O_2	Platinum: 1750 msec. Argentum: 900 msec.
N_2O	1100 msec.
CO_2	500 msec.
AA	500 msec. (once the agent has been identified)
System response time	
Adult water trap and gas sample tube	max 3 m with inner diam. 1.5 mm: Max 6 sec.
Neonatal water trap and gas sample tube	max 3 m with inner diam. 0.9 mm: Max 8 sec.
Primary anesthetic agent identification	
A primary anesthetic agent is identified by the multigas module if the concentrations are higher than:	
Halothane	0.25% HAL (0.50% at ISO spec.)
Enflurane	0.15% ENF (0.40% at ISO spec.)
Isoflurane	0.15% ISO (0.40% at ISO spec.)
Sevoflurane	0.15% SEV (0.40% at ISO spec.)
Desflurane	0.15% DES (0.40% at ISO spec.)
Secondary anesthetic agent identification	
A secondary anesthetic agent is identified by the multigas module if the concentrations are higher than:	
Halothane	0.30% HAL (0.50% at ISO spec.)
Enflurane	0.30% ENF (0.50% at ISO spec.)
Isoflurane	0.30% ISO (0.50% at ISO spec.)
Sevoflurane	0.30% SEV (0.50% at ISO spec.)
Desflurane	0.30% DES (0.50% at ISO spec.)
Alarm	
Insp. O_2% high	18 to 100% and OFF resolution: 1%
Insp. O_2% low	18 to 100% resolution: 1%
Exp. O_2% high	10 to 100% and OFF resolution: 1%
Exp. O_2% low	10 to 100% resolution: 1%
Insp. N_2O%	high Fixed at 82%
Insp. CO_2 high	0.1 to 3.0% and OFF resolution: 0.1%
Insp. CO_2 low	0.1 to 3.0% and OFF resolution: 0.1%
Exp. CO_2 high	0.0 to 15.0% and OFF resolution: 0.1%
Exp. CO_2 low	0.0 to 15.0% and OFF resolution: 0.1%
Insp. AA% high	0.0 to 30.0% resolution: 0.1%
Insp. AA% low	0.0 to 30.0% and OFF resolution: 0.1%
Exp. AA% high	0.0 to 30.0% resolution: 0.1%
Exp. AA% low	0.0 to 30.0% and OFF resolution: 0.1%
Resp. Rate high	4 to 80 resp./min and OFF resolution: 1 resp.
Resp. Rate low	4 to 80 resp./min and OFF resolution: 1 resp.

Gas measurement accuracy ("full accuracy" specifications)

Resp. rate 1 to 60 resp./min

Gas	Concentration [%REL]	Tolerance [%ABS]	Interference [%ABS]
CO_2	0–1 1–5 5–7 7–10 >10	± 0.1 ± 0.2 ± 0.3 ± 0.5 Not specified	N_2O 0.1 O_2 0.1 All agents 0.1
N_2O	0–20 20–100	± 2 ± 3	CO_2 0.1 O_2 0.1 All agents 0.1

Platinum: O_2	0–25 25–80 80–100	± 1 ± 2 ± 3	CO_2 N_2O All agents	0.2 0.2 1.0
Argentum: O_2	0–40 40-60 60-80 80-100	± (1+1% of meas. value) ± (1+2% of meas. value) ± (1+3% of meas. value) ± (1+4% of meas. value)	CO_2 N_2O All agents	<0.3 <0.3 <0.3
HAL, ENF, ISO	0–1 1–5 >5	0.15 0.2 Not specified	CO_2 N_2O O_2 2nd agent	0 0.1 0.1 0.1 (typical)
SEV	0–1 1–5 5–8 > 8	± 0.15 ± 0.2 ± 0.4 Not specified	CO_2 N_2O O_2 2nd agent	0 0.1 0.1 0.1 (typical)
DES	0–1 1–5 5–10 10–15 15–18 >18	± 0.15 ± 0.2 ± 0.4 ± 0.6 ± 1 Not specified	CO_2 N_2O O_2 2nd agent	0 0.1 0.1 0.1 (typical)
Note: Measurement drift is included in these specifications				

ENVIRONMENT

AMBIENT CONDITIONS DURING OPERATION AND STORAGE	
Storage and transportation temperature	-20°C to +50°C (optional O_2 fuel-cell sensor: 0°C to +50°C)
Ambient temperature during use	10°C to 40°C
Relative humidity	10 to 90% RH (non condensing))
Storage and transportation pressure	630 hPa to 1060 hPa (63 kPa to 106 kPa)
Ambient pressure during use	700 to 1060 mbar, equal to 3000 m to -100 m
The EMISSIONS characteristics of this equipment make it suitable for use in industrial areas and hospitals. The equipment is not intended for use in domestic areas.	