SPACELABS HEALTHCARE

Data Sheet

Multigas Module
92518

The 92518 Multigas Module monitors gas concentrations and alerts clinical personnel when the concentration of anesthetic agents, oxygen, carbon dioxide, or nitrous oxide falls outside of defined limits. The anesthetic agent being administered is automatically identified.

Features

	Note: *Module use is restricted to one patient at a time.*
Measurement of respiration rate, carbon dioxide, oxygen, nitrous oxide, and anesthetic agents	Up to two agents may be simultaneously detected; inspired and expired values for halothane (HAL), isoflurane (ISO), enflurane (ENF), sevoflurane (SEV), desflurane (DES); inspired and expired values for N_2O and O_2; inspired CO_2 (I CO_2) and end tidal CO_2 ($EtCO_2$)
Automatic features	Identification of agents; pressure and temperature compensation
Suspend mode	Allows module to remain warmed up between cases while sampling is turned OFF
MAC/AGEMAC values	Automatic MAC value calculation and AGEMAC adjustment based on patient age and body temperature
Paramagnetic oxygen sensor	Oxygen concentration is measured using a paramagnetic oxygen sensor

Product Specifications

Physical dimensions	
Height	11.3 cm (4.7 inches)
Depth	17.84 cm (17.43 inches)
Width	5.6 cm (2.33 inches)
Weight	1.026 kg (2.26 pounds)
Carbon dioxide	
Range	0 to 113 mmHg (0 to 15 kPa), 0 to 15%
Resolution	1 mmHg (0.1 kPa), 0.1%
Measurement rise time	<250 msec typically
Accuracy	±(0.2 vol% +2% of reading)
Values	I CO_2, $EtCO_2$, and instantaneous CO_2
Gas gross effect	<0.2% (O_2, N_2O, anesthetic agents)
	Note: • *mmHg values for CO_2 are based on an ambient barometric pressure of 760 mmHg* • *Helium typically decreases CO_2 readings by <0.6 vol%*
Oxygen	FiO_2 and $ETCO_2$ are displayed after one breath and have a continuously updated breath average. ET will typically decrease below nominal value (ET_{nom}) when respiration rate (RR) exceeds the RR threshold (RR_{th}) according to the following formulas: • CO_2: $ET=ET_{nom} \times 70/RR$ for RR_{th} >70 • N_2O, O_2, DES, ENF, ISO, SEV: $ET=ET_{nom} \times 50/RR$ for RR_{th} >50 • HAL: $ET=ET_{nom} \times 35/RR$ for RR_{th} >35 Measured at I/E ratio 1:1 using breath simulator according to EN ISO 80601-2-55 fig. 201.101.

Range	0 to 100%
Accuracy	±(1 vol% +2% of reading)
Measurement rise time	<450 msec typically
Values	Inspired oxygen (FiO_2), expired oxygen (FeO_2), and instantaneous O_2
Gas gross effect	<2 vol% N_2O, <1 vol% anesthetic agents
Nitrous oxide	
Range	0 to 99%
Resolution	5%
Accuracy	±(2 vol% +2% of reading)
Measurement rise time	<350 msec typically
Values	Inspired nitrous oxide (I N_2O), expired nitrous oxide (E N_2O), and instantaneous N_2O
Gas gross effect	<2 vol% anesthetic agents
Anesthetic agent	
Ranges	• HAL, ENF, ISO: 0 to 99% • SEV: 0 to 8% • DES: 0 to 20%
Resolution	0.1%
Accuracy	±(0.15 vol% +5% of reading)
Measurement rise time	<350 msec typically
Values	Inspired agents (I HAL, I ENF, I ISO, I SEV, I DES) and expired agents (E HAL, E ENF, E ISO, E SEV, E DES), and instantaneous agents
Gas gross effects	<0.15 vol% N_2O
Agent identification	
Identification threshold	0.15 vol% typical
Identification time	<20 seconds (for pure agents)
Identification threshold for two agents	0.2 vol% +10% of total concentration
MAC	
Range	0 to 9.9
Resolution	0.1
Accuracy	Depends on accuracy of expired N_2O and expired anesthetic agent readings

AGEMAC	Determined by the age and body temperature of the patient; if more than one temperature value is available, the higher value is used
Range	0 to 9.9
Resolution	0.1
Accuracy	Depends on accuracy of expired N_2O and expired anesthetic agent readings
	Note: *Measured values are shown as ATPD (ambient temperature and pressure, dry gas).*
Respiratory rate	Measurement based on CO_2 waveform; breath detection is based on a 1% change in CO_2 level. Measured at I/E ratio 1:1 using breath simulator according to EN ISO 80601-2-55 fig. 201.101.
Range	1 to 95
Resolution	±1 BPM
Apnea time out	
Range	20 to 45 seconds
Resolution	5 seconds
Accuracy	±1 second
Warm up	<20 seconds for concentration reporting, automatic agent identification, and full accuracy specification
Sample line flow rates	50 ml/min ±10 ml/min
Compensation	Automatic for atmospheric pressure, CO_2-O_2, and CO_2-N_2O collision broadening effect
CO_2 waveform scales	Selectable at 0 to 120 mmHg, 0 to 100 mmHg, 0 to 80 mmHg, 0 to 60 mmHg, 0 to 40 mmHg (0 to 15 kPa, 0 to 12.5 kPa, 0 to 10 kPa, 0 to 7.5 kPa, 0 to 5 kPa), 0 to 15%, 0 to 12.5%, 0 to 10%, 0 to 7.5%, 0 to 5%
O_2 and N_2O waveform scales	Selectable at 0 to 100%, 0 to 80%, 0 to 60%, 0 to 40%, 0 to 20%
Anesthetic agent waveform scales	
HAL, ISO, ENF	0 to 5%, 0 to 4%, 0 to 3%, 0 to 2%, 0 to 1%
SEV	0 to 8%, 0 to 6%, 0 to 4%, 0 to 2%, 0 to 1%
DES	0 to 20%, 0 to 15%, 0 to 10%, 0 to 5%, 0 to 2.5%
Waveform speed	Selectable at 25, 12.5, 6.25, 3.12, 1.56 mm/second
Parameter units	%, mmHg (kPa) for CO_2; % for O_2, N_2O, and agents; BPM for respiration rate
Alarms	User-selectable; respiration rate, inspired and expired N_2O, inspired and expired agents, $EtCO_2$, FiO_2, and FeO_2 (high and low values monitored), I CO_2 (high values monitored), and apnea time out; all alarms default to OFF
Gas calibration	Calibration from external gas mixture
Occlusion	Automatically detects and attempts to clear sample line occlusions
Agent mix detected	Status message shows when a mixture of more than two agents is detected.
Suspend sampling	In Suspend mode, sensors continue to operate but pumps stop and waveform and numeric zones are cleared, allowing sensors to remain warmed up.

Module parameter count	When computing parameter capacity, this module counts as two to four parameters.
Total system response time	<4 seconds (with 2-meter Nomoline sampling line)

Monitor Compatibility

Monitors supported	• Qube® (91390) • Xprezzon® (91393)

Classifications

MDD	Class IIb
EN 60601-1, Class I	Type CF defibrillator proof; device is not affected by patient defibrillation. Rated for continuous operation
CISPR11, Group 1, Class B	Suitable for use in establishments connected to a low-voltage supply network, which supplies building used for domestic purposes.

Electrical Specifications

N/A (Module using host power only)

Certifications

ASTM 1456, 1462, 1463; ISO 11196 (in lieu of ASTM 1452); CSA Z168-6, Z9918.

Environmental Requirements

Storage	
Temperature	-40° to 70° C (-40° to 158° F)
Humidity	95% (non-condensing) relative humidity (RH)
Altitude	0 to 12,192 meters (0 to 40,000 feet)
Operating	
Temperature	10° to 40° C (50° to 104° F)
Humidity	95% (non-condensing) relative humidity (RH)
Altitude	395 to 903 mmHg

Documentation

This product ships with a complete set of comprehensive documentation.

For a full list of available supplies and accessories, refer to the *Spacelabs Healthcare Supplies and Accessories Catalog* at https://www.spacelabshealthcare.com/supplies.

Regulatory Approvals

CE 0123	CE marked in accordance with the Medical Device Directive 93/42/EEC.
	Does not contain hazardous substances — China

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