Masimo Capnography and Multigas OEM Solutions

Breakthrough sidestream and mainstream gas monitoring technology

Masimo capnography and multi-gas solutions are flexible, easy to integrate, and designed to measure respiratory gases in a wide range of clinical applications and patient populations. They feature:

> Complete end-to-end solutions, with both mainstream and sidestream options

> Flexible configurations, able to accommodate the full spectrum of gas monitoring needs, from capnography to advanced multi-gas measurement

> Ease of integration with external analyzers and built-in modules that use a universal communication protocol

> Moisture-wicking sampling line technology for effective sidestream capnography and multi-gas measurement

Masimo

NomoLine® ISA™ Gas Analyzers

Comprehensive, versatile capnography and multigas sidestream measurements

NomoLine ISA CO2

50 ml/min sampling rate and small sample cell (15μl) facilitate accurate measurements and crisp waveforms

> Enables gas monitoring on patients with low tidal volumes and high respiratory rates, such as neonates

Calibration-free spectrometer enables fast start up, with full accuracy in less than 10 seconds[1]

> Provides fast, accurate data in emergency settings, helping clinicians respond quickly

DB9

LEMO
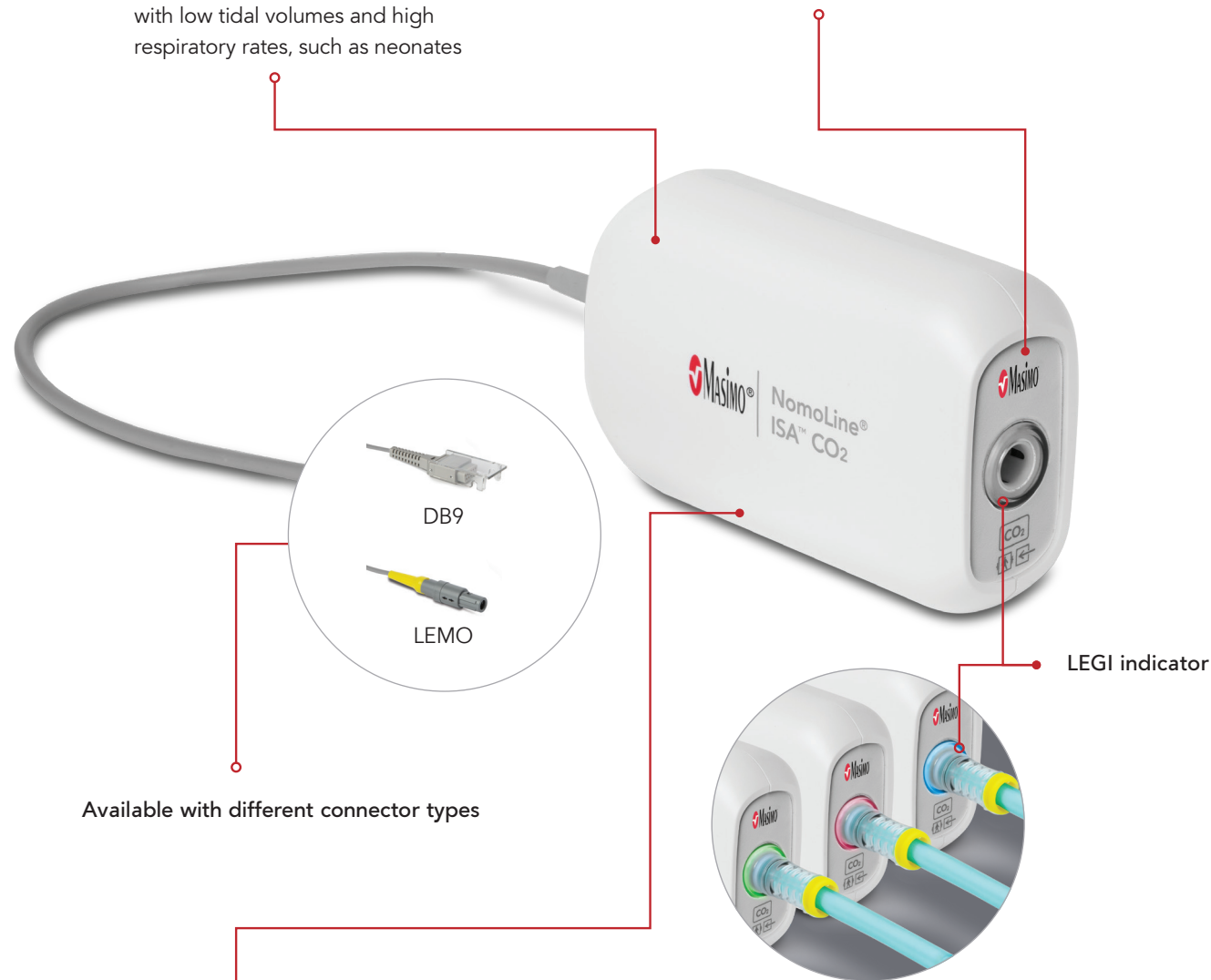
Available with different connector types

Small, compact, lightweight module can be used in a variety of clinical settings and applications

> Compact size reduces clutter and dedicated device footprint

LEGI indicator

Light Emitting Gas Inlet (LEGI) indicator illuminates in different colors to provide visual indicators of ISA module status

> Simple plug-in connector provides a leak-free connection to the ISA module

- **Green:** Sampling line connected
- **Blinking Red:** Replace sampling line
- **Steady Red:** Analyzer error
- **Blue:** Measuring anesthetic gas*

[1] Operators Manual
* Applicable to NomoLine ISA AX+ and OR+

NomoLine ISA AX+ and OR+

> Able to measure inhaled and exhaled CO_2, O_2, N_2O, and anesthetic agents (Halothane, Enflurane, Isoflurane, Sevoflurane and Desflurane) with automatic gas recognizing algorithm, **Agent-ID**

- Simultaneously measure and display up to 2 agents
- More detailed data may facilitate efficient titration of anesthetic gases

> Spectrometer enables fast start up, with full accuracy in less than 20 seconds

> Low power consumption and automatic temperature and pressure compensation make all NomoLine ISA gas analyzers easy to maintain

NomoLine ISA OR+: Provides O_2 and anesthetic gas measurements in addition to capnography

NomoLine ISA AX+: Provides anesthetic gas measurements in addition to capnography

NomoLine ISA Accessories

Mounting Solutions: Brackets that allow mounting of the NomoLine ISA gas analyzers onto a monitor

For use with NomoLine ISA CO2 and AX+

For use with NomoLine ISA OR+

NomoLine ISA Exhaust Kit: Connects the analyzer to a scavenging system in order to discard the exhaust gas
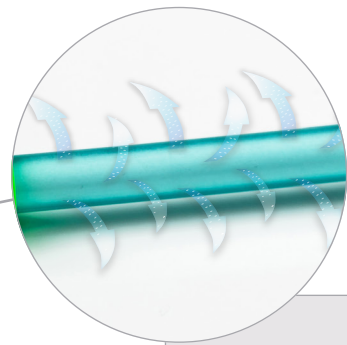
NomoLine ISA Maintenance Kit: Equipped with components that can be used for annual maintenance of NomoLine ISA gas analyzers
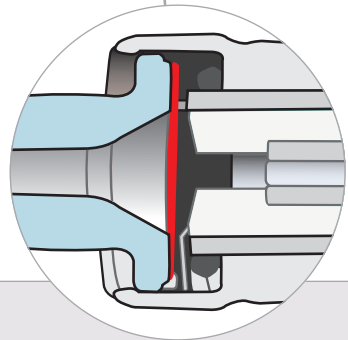
NomoLine Sampling Lines

Airway Adapter Sets and Cannulas for all patients
in both low and high humidity conditions

> Simple click-in connector
allows for leak-free connection
to the gas analyzer

**Ergonomically designed cannulas
improve patient comfort**

> Lightweight, soft cannulas with
a curved design fit the contours
of the face to minimize pressure

> Multiple options allow for use
with all patient populations

**Moisture-wicking section eliminates
the need for a water trap**

> Patented no-moisture
polymer allows moisture to
diffuse into the environment

> Moisture-free sample provides
accurate measurements to
help clinicians make more
informed decisions

**Uniquely designed sampling line allows
for usage during low-flow and small
sample-size applications**

> Requires only a small breath sample,
50 ml/min

> Airway Adapter Sets with low dead
space allow for faster rise time and
an unaffected waveform

**Hydrophobic bacterial filter reduces
contamination of the ISA™ analyzer**

> Extends the life of the module by
reducing water intrusion

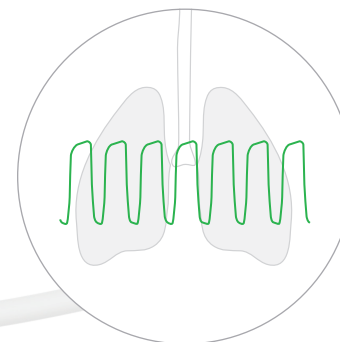> Ensures safety by reducing the risk of
bacterial contamination

> Star-shaped Lumen
oxygen delivery tubing
ensures supply even
if kinked
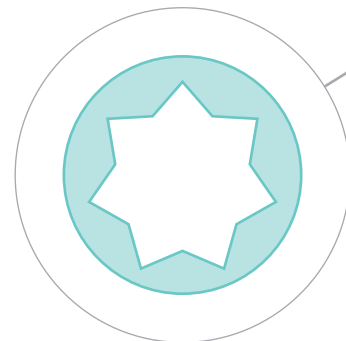
IRMA™ Mainstream Gas Analyzers

**Versatile capnography and multi-gas measurement solutions**

IRMA CO2

Mainstream technology measures gas directly in-line and does not remove gas from the patient circuit, reducing delays in measurement

> Ideal for gas monitoring on patients with low-flow or on a closed ventilator circuit

LED indicator illuminates in different colors to provide visual indicators of IRMA analyzer status

> **Green:** Airway adapter connected
> **Blinking Red:** Check airway adapter
> **Red:** Sensor error
> **Blue:** Measuring anesthetic gas*

DB9

LEMO
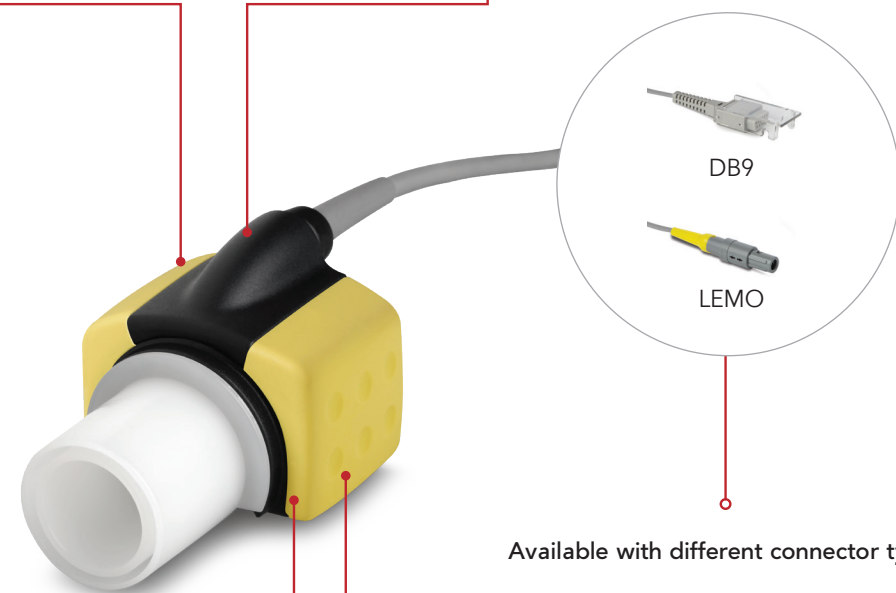
Available with different connector types

Small, compact and lightweight analyzer (<25g) can be used in a variety of clinical settings and applications

> Compact size and lightweight design reduce weight on the respiratory circuit allowing for use on smaller patients

Quick start up time of less than 10 seconds provides crisp waveforms with fast rise time

> Provides accurate data to clinicians in emergency settings allowing for quicker informed decision making

IRMA AX+

> Able to measure inhaled and exhaled CO_2, N_2O, and anesthetic agents (Halothane, Enflurane, Isoflurane, Sevoflurane and Desflurane) with automatic gas recognizing algorithm, **Agent-ID**

- Simultaneously measure and display up to 2 agents
- More detailed data may facilitate efficient titration of anesthetic gases

> Spectrometer enables fast start up, with full accuracy is less than 20 seconds

> Low power consumption and automatic temperature and pressure compensation make all IRMA gas analyzers easy to maintain

Provides anesthetic gas measurements in addition to capnography and respiratory rate

IRMA Accessories

IRMA Airway Adapters: Airway adapters with hydrophilic coating that are insensitive to humidity and allow for connection to the respiratory circuit

Adult/Pediatric Airway Adapter

Infant Airway Adapter

IRMA Velcro Holder: Designed to secure the IRMA analyzer when not being used

IRMA Holder Velcro

Performance and Specifications

ORDERING INFORMATION

IRMA CO2 . . . . REF 200101/200107
IRMA AX+ (CO2, N2O, 5 AA, AA ID). . . . . REF 200601/200607
NomoLine ISA Capno Module (CO2). . . . . REF 4354
NomoLine ISA CO2 . . . . REF 4410/4412
NomoLine ISA AX+ Module (CO2, N2O, 5 AA, AA ID) . . . . .REF 700601
NomoLine ISA AX+ (CO2, N2O, 5 AA, AA ID). . . . . .REF 800601/800607
NomoLine ISA OR+ (CO2, O2, N2O, 5 AA, AA ID) .REF 800401/800407

GENERAL

Weight. . . . . IRMA CO2/AX+: < 25 g (cable excluded)
NomoLine ISA CO2: < 98 g (cable excluded)
NomoLine ISA Capno Module: ≤ 55g
NomoLine ISA AX+ Module: <75 g
NomoLine ISA AX+: Max. 140 g Including cable,
Excluding tubing and NomoLine sampling line.
NomoLine ISA OR+: Max. 270 g Including cable.
Excluding tubing and NomoLine sampling line.
Size. . . . . IRMA CO2/AX+: 38 x 37 x 34 mm (1.49 x 1.45 x 1.34 inches)
NomoLine ISA CO2: 37 x 91 x 60 mm (1.4 x 3.6 x 2.4 inches)
NomoLine ISA Capno Module: 64 x 38 x 23 mm (2.5 x 1.5 x 0.9 inches)
NomoLine ISA AX+ Module: 23 x 62 x 38 mm (0.9 x 2.4 x 1.5 inches)
NomoLine ISA AX+: 37 x 91 x 60 mm (1.4 x 3.6 x 2.4 inches)
NomoLine ISA OR+: 88 x 91 x 52 mm (3.5" x 3.6" x 2.0")
Power supply . . . . .4.5 to 5.5 VDC
IRMA CO2: < 1.0 W (normal op.)
IRMA AX+: < 1.4 W (normal op.)
NomoLine ISA CO2: ≤ 0.9 W (normal operation @ 5V)
NomoLine ISA AX+: ≤ 1.6 W (normal operation @ 5V)
NomoLine ISA OR+: ≤ 2.5 W (normal operation @ 5V)

ENVIRONMENTAL

Operating temperature . . . . IRMA CO2: 0 to 40 °C (32 to 104 °F)
IRMA AX+: 10 to 40 °C (50 to 104 °F)
NomoLine ISA CO2: 0 to 50 °C (32 to 122 °F)
NomoLine ISA Capno Module: 0 to 65 °C (32 to 149 °F)
NomoLine ISA AX+: 5 to 50°C (41 to 122°F)
NomoLine ISA OR+: 5 to 40°C (41 to 104°F)
Storage temperature. . . . . IRMA CO2/IRMA AX+: -40 to 70 °C (-40 to 158 °F)
NomoLine ISA CO2: -40 to 70 °C (-40 to 158 °F)
NomoLine ISA AX+: -40 to 70 °C (-40 to 158 °F)
NomoLine ISA OR+: -30 to 70°C (-22 to 158°F)
Operating humidity . . . . 10 – 95% RH (non-condensing)
Operating atmospheric pressure . . . . 525 – 1200 hPa (< 5211 m)

PATIENT CONNECTIONS

IRMA Airway Adapter Adult/Pediatric. . . . . < 6 ml dead space
REF 106220
IRMA Airway Adapter Infant . . . . < 1 ml dead space
REF 106260
NomoLine sampling lines . . . . See separate NomoLine information
for full details of available options

GAS ANALYSER

Automatic compensation. . . . . Pressure and temperature
Warm-up time . . . . IRMA CO2/NomoLine ISA CO2: < 10 sec
IRMA AX+/NomoLine ISA AX+/NomoLine ISA OR+: < 20 sec

ISA sampling flow rate . . . . 50 ± 10 ml/min

Fulfills the requirements of EN ISO 80601-2-55
Accuracy during standard conditions:

	RANGE	ACCURACY
CO2.	0 – 15 vol%	. . . .± (0.2 vol% + 2% of reading)
N2O	0 – 100 vol%.	. . . .± (2 vol% + 2% of reading)
HAL, ISO, ENF	0 – 8 vol%.	. . . . ± (0.15 vol% + 5% of reading)
SEV	0 – 10 vol%	. . . . ± (0.15 vol% + 5% of reading)
DES.	0 – 22 vol%	. . . . ± (0.15 vol% + 5% of reading)
O2 (NomoLine ISA OR+).	0 – 100 vol%.	. . . .± (1 vol% + 2% of reading)

Rise time. . . . . IRMA CO2: ≤ 90 ms
IRMA AX+: CO2 ≤ 90 ms, N2O, Agents ≤ 300 ms
NomoLine ISA CO2: ≤ 200 ms
NomoLine ISA AX+/OR+: CO2 ≤ 300 ms, N2O, Agents, O2 ≤ 400 ms, HAL ≤ 500 ms
Analyzer system response time. . . . . IRMA CO2/AX+: < 1 sec,
NomoLine ISA CO2: ≤ 3 sec, NomoLine ISA AX+/OR+: ≤ 4 sec
Breath detection . . . . .Adaptive threshold, minimum 1 vol%
change in CO2 concentration
Respiratory rate . . . . .0 – 150 bpm ± 1 bpm

CERTIFICATIONS

IRMA and ISA external analyzers are CE Marked according to the 93/42/EEC
Medical Device Directive

Data subject to change without notice

CONNECTOR SOLUTIONS

IRMA and ISA external analyzers are available with either a female DB-9 connector or a
male 8-pin LEMO Push n' Pull connector for power supply and RS-232 communication. An
open-end cable (REF 100270) that matches the DB-9 connector can also be supplied for
customer specific connector solutions.

Variety of Options to Meet All of Your Needs

		Analyzer Options				
		NomoLine ISA CO2	NomoLine ISA AX+	NomoLine ISA OR+	IRMA CO2	IRMA AX+
Gases	CO2	•	•	•	•	•
	O2			•		
	N2O		•	•		•
	Agents		•	•		•
	Auto ID/mixed agents		•	•		•
	Optional built-in Module	•	•	•		

Caution: Federal (USA) law restricts this
device to sale by or on the order of a
physician. See instructions for use for full
prescribing information, including indications,
contraindications, warnings, and precautions.

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