EMMA FAQ´s and Features

Where is the EMMA name coming from?
EMMA is an abbreviation of Emergency Mainstream Analyzer.

What is EMMA?
EMMA is an Emergency Capnometer for proof-of-intubation and short term ETCO2 and RR monitoring of adults, children and infants in emergency transport, emergency care and intensive care.

What does EMMA measure?
It measures end-tidal CO2 and respiratory rate.

Is EMMA CE marked?
Yes, EMMA is CE marked.

How accurate is EMMA?
The accuracy of all measurement values complies with the standard ISO 21647 Medical electrical equipment – Particular requirements for the basic safety and essential performance of respiratory gas monitors.

How durable is EMMA?
EMMA has a rugged, shock-proof and water resistant design to provide the user with a reliable monitor for any emergency situation. EMMA is designed in accordance with EN1789 standard for Road Ambulances.

How do I connect EMMA to a patient?
EMMA can be connected to any patient airway connection (i.e. endotracheal tube, laryngeal mask or facial mask).

Can EMMA be used on infants?
Yes, the EMMA Airway Adapter Infant has a dead space of 1 ml and a flow resistance of 1.0 cmH2O at 10 lpm, allowing the use of EMMA even for very small patients.

Can EMMA be used with rechargeable batteries?
Yes. EMMA can be used with rechargeable batteries but operating specifications is related to non rechargeable alkaline and lithium batteries.

How often do I need to change the batteries?
The operating life time with lithium batteries is 12 hours of normal use and 8 hours with alkaline batteries. Remove the batteries from EMMA if it is not likely to be used for 90 days or more.

Can the Airway Adapter be sterilized?
No. EMMA Airway Adapters are designed for single patient use.

Can the Airway Adapter be kept inline continuously?
Yes, but should be monitored for moisture condensation and contamination.

What is EMMA's start-up time?
EMMA has full accuracy within 5 s after switched on.

How does EMMA measure ETCO2?
The measurement of ETCO2 is done with an infrared micro bench. A microprocessor continuously calculates ETCO2 concentrations from the infrared light absorption measurement done through the windows of the Airway Adapter.

How does the battery indicator work?
A green light indicator is lit when the battery status is OK. The green indicator will start blinking continuously when there is less than 30 minutes left of use (only when using alkaline batteries).

How is ETCO2 and breathing visualized?
Both ETCO2 and respiratory rate are visualized on LED numeric displays. A large, easy to read, 14 segment bar graph gives immediate visual feedback for ETCO2 concentrations, breathing activity or alarm situations.

How quickly does EMMA display ETCO2 and respiratory rate values?
The ETCO2 values are displayed after one breath and updated every breath. Respiratory rate will be displayed after two breaths and updated every breath.

What are the numbers displayed at start up?
The numbers displayed at start up specify the unit's software version.

How do I switch off EMMA?
EMMA will automatically switch off after 15 seconds if the Airway Adapter is removed. If there is no breath detected EMMA will switch off automatically after 2 minutes. EMMA Monitor will only switch off after 2 minutes if the Alarm Silence has been activated and no breath has been detected for 2 minutes. If EMMA Monitor is turned on and never used on a patient (no breathing detected) it will automatically switch off after 2 minutes.

In which environments can EMMA operate?
EMMA is recommended to be operated at temperatures within the interval of -5 to 50 °C (23 to 122 °F). The operating humidity should be in the interval of 10 - 95% RH, and the atmospheric pressure 70-120 kPa, (EMMA displays CO2 in partial pressure units (kPa or mmHg) and compensates the displayed value for the actual barometric pressure). EMMA can be stored in temperatures between -30 to 70 °C (-22 to 158 °F). The storage humidity should be in the interval of 5 - 100% RH, condensing and the atmospheric pressure 50-120 kPa non-condensing.

What alarm functions is EMMA equipped with?
EMMA is available with a comprehensive alarm system with both visual and audible alarms for no adapter, check adapter, no breath detected, low battery, low ETCO2 (EMMA monitor) and high ETCO2 (EMMA monitor).

What are the default alarm settings?
The default settings are 50 mmHg (7,0 kPa) for high ETCO2 and the low ETCO2 is set to OFF.

Can the alarms be adjusted?
Yes the HIGH and LOW ETCO2 alarm limits can be adjusted. It is also possible to switch off the limits if necessary. Carefully follow the instructions in the EMMA User's Manual.

How do I silence an alarm?
An alarm can be silenced by pressing the Alarm Silence button. The top segment of the bar graph will change color to red.

How long is an alarm silenced for?
The alarm is silenced for 2 minutes.

What will happen if the alarm is silenced and no breath is detected within the 2 minutes period of time?
If no breath is detected within the 2 minutes period of time the unit will shut off. If breathing re-appears within the 2 minutes period of time the unit will reactivate the alarm system and measure normally.

How loud is EMMA's alarm?
The audible alarm level of an EMMA Monitor is higher than ≥ 80 dB(A).

What is the audible alarm sequence on an EMMA Monitor?
When an alarm is detected the alarm status indicator (yellow led on top of the bar graph) is lit with a steady yellow light and one audible beep every 24th second. When the alarms No Breath or ETCO2 High/Low have been present for 40 seconds the Alarm Status Indicator will start to blink and an audible three tones beep every 24th second. The indicators will keep blinking and the three tone beeps will be repeated until the Airway Adapter is detached from the device or after 2 minutes if the alarm silence key has been pressed.

Can EMMA be used in Home Care?
Yes, when EMMA is used by authorized and trained health care professionals.

What are the advantages vs. traditional sidestream monitoring?
Unsurpassed mobility compared to EMMA. Cables and tubing can represent a hazard in an emergency situation.

How often do I need to calibrate EMMA?
EMMA does not require any routine calibration. Gas readings should be verified with a reference instrument at regular intervals.

How do I zero EMMA?
To perform a zeroing, carefully follow the instructions in the EMMA User's Manual.

How often do I need to zero EMMA?
A zeroing of the measurement should be performed whenever an offset in gas readings is discovered. For example if EMMA would display a non-zero ETCO2 value when switched on. Zeroing is also recommended after 500 hour of operation.

How do I clean EMMA?
EMMA can be cleaned using a cloth moistened with isopropyl alcohol.

EMS (Emergency Medical Service)

Why Capnography?

Ventilation
- EtCO2 measures ventilation
- SpO2 measures oxygenation
- The vital measurement of respiratory rate
- Provides an immediate picture of the patient condition

Airway management
- Ongoing assessments (provides assurance that the tube is maintained in the trachea)
- Safety during transports (extubation, ventilation, disconnects, etc)

Resuscitation Monitoring
- Verification/confirmation of tracheal intubation
- Assess efficacy of CPR – early indicator of return of spontaneous circulation (ROSC)
- Recommended AHA guideline

Hypoventilation due to sedation, analgesia or overdose

EMMA Key Features

- Easy to use
- Quantitative
- Mainstream device
- Pocket sized, lightweight (60 grams)
- Battery powered – 2 AAA
- Alarms & indicators
- Infant through adult population
- No calibration required

Features for Neonatal and Pediatric Intensive Care Unit

Why Capnography?

Ventilation
- EtCO2 measures ventilation
- SpO2 measures oxygenation
- Provides immediate picture of the patient condition
- The vital measurement of respiratory rate

Airway management
- Ongoing assessments (provides assurance that the ETT is maintained in the trachea)
- Safety during transports (extubation, ventilation, disconnects, etc)

Ventilator weaning

Assessment of manual or mechanical ventilation efficacy

Evaluation of the Respiratory Compromised Intubated Patient
- Need for treatment, suctioning and medications can be continuously assessed
- Assessment post-treatment
- Assessment of alveolar emptying

Resuscitation Monitoring
- Verification/confirmation of tracheal intubation
- Assess efficacy of CPR – early indicator of return of spontaneous circulation (ROSC)
- Informs the clinician to effectiveness of cardiac compression
- Recommended AHA guideline

Reduction in the number of ABG draws

EMMA Key Features

- Easy to use
- Quantitative
- Mainstream device
- Pocket sized, lightweight (60 grams)
- Battery powered – 2 AAA
- Alarms & indicators
- Infant through adult population
- No calibration required

Critical Care / ICU - Intensive Care Unit

Why Capnography?

Ventilation
- EtCO2 measures ventilation
- SpO2 measures oxygenation
- The vital measurement of respiratory rate
- Provides immediate picture of the patient condition

Airway management
- Ongoing assessments (provides assurance that the ETT is maintained in the trachea)
- Safety during transports (extubation, ventilation, disconnects, etc)
- Basic monitoring

Ventilator weaning

Assessment of manual or mechanical ventilation efficacy

Evaluation of the Respiratory Compromised Intubated Patient
- Need for treatment, suctioning and medications can be continuously assessed
- Assessment post-treatment

Resuscitation Monitoring
- Verification/confirmation of tracheal intubation
- Assess efficacy of CPR – early indicator of return of spontaneous circulation (ROSC)
- Informs the clinician to effectiveness of cardiac compression
- Recommended AHA guideline

Hypoventilation due to sedation, analgesia or overdose

Reduce the number of ABG draws

EMMA Key Features

- Easy to use
- Quantitative
- Mainstream device
- Pocket sized, lightweight (60 grams)
- Battery powered – 2 AAA
- Alarms & indicators
- Infant through adult population
- No calibration required

PACU - Post Anesthesia Care Unit

Why Capnography?

Ventilation
- EtCO2 measures ventilation
- SpO2 measures oxygenation
- The vital measurement of respiratory rate
- Provides immediate picture of the patient condition

Airway management
- Ongoing assessments (provides assurance that the ETT is maintained in the trachea)
- Safety during transports (extubation, ventilation, disconnects, etc)

Ventilator weaning

Assessment of manual or mechanical ventilation efficacy

Evaluation of the Respiratory Compromised Intubated Patient
- Need for treatment, suctioning and medications can be continuously assessed
- Assessment post-treatment

Resuscitation Monitoring
- Verification/confirmation of tracheal intubation
- Assess efficacy of CPR – early indicator of return of spontaneous circulation (ROSC)
- Informs the clinician to effectiveness of cardiac compression
- Recommended AHA guideline

Hypoventilation due to sedation, analgesia or overdose

EMMA Key Features

- Easy to use
- Quantitative
- Mainstream device
- Pocket sized, lightweight (60 grams)
- Battery powered – 2 AAA
- Alarms & indicators
- Infant through adult population
- No calibration required

What are the advantages of EMMA vs. traditional Sidestream monitoring?

- EMMA is a CE marked Emergency Capnometer for rapid application, proof-of-intubation and short term CO2 monitoring of adults, pediatrics and infants in emergency transport, emergency care and intensive care.
- It measures end-tidal CO2 and respiratory rate.
- EMMA provides unsurpassed mobility compared to traditional Sidestream monitoring due to its compact size, lack of cables, tubing, connectors or filters.
- EMMA is self contained and can be directly connected to an endotracheal tube, laryngeal mask or facial mask via the Disposable Airway adapter which prevents cross infection ensuring utmost patient to patient hygiene.
- Sidestream monitoring requires tubing, connectors and filters lengthening the patient application time, introducing unnecessary delays in an emergency situation.
- Compared to Sidestream monitoring EMMA has no warm up time and has full accuracy as soon as switched on and EMMA displays ETCO2 values after only one breath and is updated every breath. Respiratory rate will be displayed after two breaths and updated every breath.
- Both ETCO2 and respiratory rate are visualized on LED numeric displays. A large, easy to read, 14 segment bar graph gives immediate visual feedback for ETCO2 concentrations, breathing activity or alarm situations. EMMA is available with a comprehensive alarm system with both visual and audible alarms for apnea, adapter clogging and high and low end-tidal values.
- Compared to Sidestream EMMA has a rugged, shock-proof and water resistant design (IEC60529:1989 Class IP33) provides the user with absolute portability coupled with reliable monitoring for any emergency situation. EMMA has also been designed in accordance with EN 1789:2007 standard for Road Ambulances.
- Unlike sidestream EMMA does not require regular calibration which lowers the cost of ownership

EMMA Key Features

- Easy to use
- Adaptable
- Rapid Application
- Portable
- Compact (52 x 39 x 39 mm)
- Lightweight (60 grams)
- Rapid Quantitative Measurement
- End tidal CO2 and Respiratory Rate
- Infant through Adult use
- Self contained Mainstream device
- Battery powered – 2 AAA (8 hours normal use)
- Alarms & Indicators
- Low cost of ownership

A Capnometer, but …

Which one?

If you are deciding which Emergency Capnometer to buy, there are many important considerations. Some are of obvious importance while other subtle yet critical to your satisfaction and choice.

Not all technologies are created equal!

	EMMA	Sidestream
Measures end-tidal CO2 and respiratory rate	YES	YES
Free from cables	YES	NO
Compact size	YES	NO
Light weight	YES	NO
Portable	YES	NO
Battery powered	YES	NO
Is powered with standard AAA batteries	YES	NO
Designed for ambulance transport and emergency use	YES	NO
Shock proof and water resistant	YES	NO
No need for regular calibration	YES	NO
Instant startup time	YES	NO
Monitoring of adults/children and infants	YES	NO
Low cost of ownership	YES	NO
Fast response time	YES	NO
No need for drawing away airway gases from the patient circuit	YES	NO
Clinician can read CO2 values with full attention on patient	YES	NO

A Capnometer, but …

Which one?

If you are deciding which Emergency Capnometer to buy, there are many important considerations. Some are of obvious importance while other subtle yet critical to your satisfaction and choice.

Not all technologies are created equal!

	EMMA	Colorimetric
Detects CO2	YES	YES
Measures end-tidal CO2	YES	NO
Measures respiratory rate	YES	NO
Visible in dark conditions	YES	NO
Alarm for HIGH or LOW CO2	YES	NO
Alarm for apnea	YES	NO
Fast startup time	YES	NO
Start measures from the first breath	YES	NO
Eliminates the risk for false proof of intubation	YES	NO
Can be used on patients with cardiac arrest	YES	NO
Can be used continuously in more than 3 hours	YES	NO