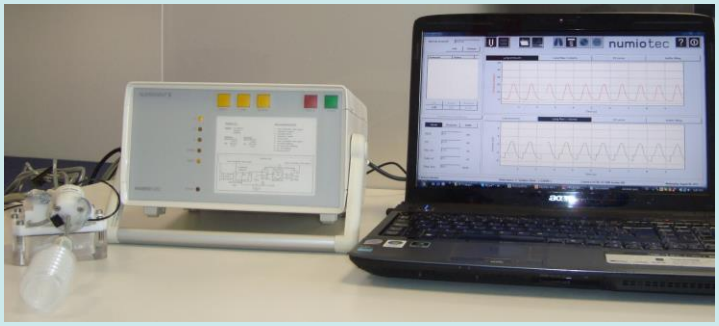
numioV-MRI

Volumetric Mechanical Ventilator MRI compatible



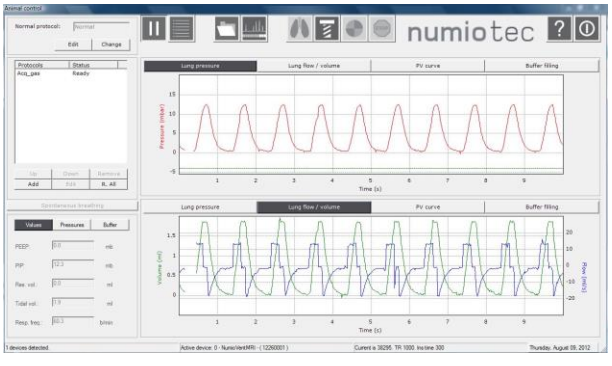
numioV-MRI is a mechanical ventilator designed to work on MRI environment, and use special gases. Monitorize the main respiratory physiology measurements of the animal, and providing flexibility, operating capacity and simplification to the experiment.

Benefits for the experiment

- Allows experiments with complex respiratory cycles
- Allows the experimenter to focus on the fundamental part of the experiment and not on the respiratory control of the animal
- Guarantees the repeatability of the experiment
- Bridle a high level of rigor in the conclusions of the data obtained
- Allows to control the parameters of the animal and protects it avoiding undesirable accidents during the experiment.

Applications

- Study of dynamic and physiology pulmonary, specially using hyperpolarized and fluorinated gases
- Study of cardiology applications: avoid the breathing movement artifact
- Brain studies, specially fMRI to control the blood oxygenation of the animal
- Oncology applications

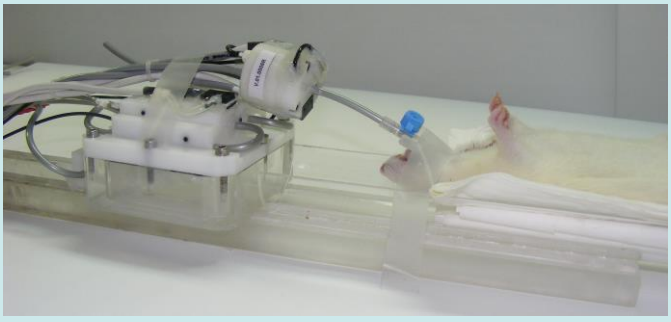


Main Interface

numiotec
numio tecnologías S.L.
San Francisco 32,
Manzanares el Real,
28492 – Madrid (Spain)
www.numiotec.com
numio@numiotec.com
(+34) 677 522 042

Functional Characteristics

- Synchronization of the image acquisition with the respiratory cycle
- Two working modes:
  - *Normal Mode,* to keep he animal in the vital cycle with mechanical ventilation
  - *Adquisition Mode,* to perform a wide variety of procedures
- Planning of queue of experiments (acquisitions) and to run them automatically
- Two independent inspiratory channels llow mixing some inspiratory gases
- Special to deliver special gases (hyperpolarized, fluorinated, anesthetics, …)
- The exhaled gas can be collected for recycling or further analysis
- Completely compatible with MRIand TACs
- Collect information of respiratory physiology: Inspiratory Flow and PV Curves
- Collects information of the respiratory physiology in the mouth of the animal
- Real-time protection of the animal lung again over-pressure
- Data storage capacity in internal memory (opcional)
- Adaptation to the work environment
- Negligible dead volume



Coupling of the system to the animal in MRI support

Techncial Characteristics

Lung real-time protection	over-pressure limit < 40 mbar
Inspiratory flow	0 – 1 l/min (optional 0 – 40 l/min)
PEEP control	0 – 30 mbar
Respiratoy frequencies	2 – 120 rpm
Inspiratoy volume (60 rpm; i:e, 1:3):	0,1 – 10 ml (optional 5 – 500 ml)
Precision and reproductibility in the cycle	< 1ms
Precision of parameters request	< 5%

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