

OXY300-MRI – SMALL ANIMAL NON-INVASIVE VITAL SIGNS MONITOR



MRI Usage: MR Conditional

Condition: Must use MR sensor clip and max MR field strength 9T; modules stay in control room.

OXY300-MRI is a complete system for collecting small animal SpO₂ measurements in an MRI environment.

- Works on conscious or anesthetized subjects
- Patented sensor supports heart rates in the range of 90-900 BPM
- Works with neonatal mice up to 500 gram rats
- MRI sensor works in closed, small, and large bore MRI machines
 - regularly used in 9T magnets and has been successfully used in a 19T magnet
 - contact BIOPAC to discuss specific magnet strengths up to 19T
- Immediate access to Vital Signs for pre-, intra- and post-operative measurements
- Arterial Oxygen Saturation
 - comprehensive health indicator
 - indicates lung efficiency, not just airflow
- Heart Rate
- Pulse Distention*
 - indicates signal quality

SYSTEM COMPONENTS

Includes:

Small Animal Vital Signs Monitor - MouseOx[®] Plus Monitor

MRI sensor

Analog output data unit

Interface Cables for MP160/MP150 Systems (2 x CBL102, plus 2 x CBL122. *CBL122 necessary only for MP160 System*)

OXY300-MRI REFERENCES

[OXY300-MRI User Manual](#)

[OXY300-MRI Publications](#)

*System includes cables for two signals. To simultaneously record additional signals, additional cables must be purchased separately.

SPECIFICATIONS

Oxygen Saturation (%)

Measurement Range (pulse rate 90 to 900 bpm):	0 to 100% Arterial Blood Oxygen Saturation
Measurement Resolution (pulse rate 210 to 900 bpm):	1.5%, across entire range
Measurement Response Time:	SpO ₂ is reported to the user after each heartbeat

Heart Rate (bpm)

Measurement Range:	90 to 900 bpm																		
Measurement Resolution (pulse rate 210 to 900 bpm):	<table border="1"> <thead> <tr> <th>Rate (bpm)</th> <th>Resolution (bpm)</th> </tr> </thead> <tbody> <tr><td>210</td><td>2.4</td></tr> <tr><td>300</td><td>4.9</td></tr> <tr><td>400</td><td>8.7</td></tr> <tr><td>500</td><td>13.5</td></tr> <tr><td>600</td><td>19.4</td></tr> <tr><td>700</td><td>26.2</td></tr> <tr><td>800</td><td>34.0</td></tr> <tr><td>900</td><td>42.9</td></tr> </tbody> </table>	Rate (bpm)	Resolution (bpm)	210	2.4	300	4.9	400	8.7	500	13.5	600	19.4	700	26.2	800	34.0	900	42.9
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Pulse Distention (µm)

Measurement Range (pulse rate 90 to 900 bpm):	0 to 800 µm
Measurement Resolution (pulse rate 210 to 900 bpm):	= 2.4% of measurement
Measurement Response Time:	Pulse distention is reported to the user after each heartbeat

Respiration

Respiration may be available as a derived signal but is not suitable for use with gating systems

Warning: No part of the OXY300-MRI MouseOx® Plus system other than the fiber optic cable and the sensor should go into an MRI machine.

Analog output interface:	2 x CBL102 (included) to UIM100C module for BIOPAC MP150 System 2 x CBL123 (included) to AMI100D/HLT100C module for BIOPAC MP160 System
Delay:	Fixed (0.7-1.4 seconds)
Small Animal Vital Signs Monitor:	MouseOx® Plus Control Box (Starr Life Sciences)
BNC Output Range:	±5 V

Screen refreshes every 0.72 seconds to update measurement values

12 VAC Power Supply (one of the following)

- US and Canada: Standard External Plug-in Power Supply
- International: Power Transformer and Power Cord to fit your wall receptacle

12-foot 2.0 USB Cable

CD with MouseOx® Plus Electronic User Manual

Universal Cable

Computer and Electrical Requirements for MouseOx Plus:

- Processor- PC with Pentium-class processor (Pentium 1 GHz or higher recommended)
- Computer Hardware
- VGA or higher resolution monitor (Super VGA recommended)
- 2.0 USB port

Operating System: Windows® XP, Vista, 7 or newer, compatible with Apple® computers when using a Windows® emulator

Memory: 1 GB RAM; 5 MB Hard-Drive Space for program (does not include data files)

Minimum Screen Resolution: 1024 by 768 pixels

The MouseOx® Plus has the following power requirements:

Operating Wall Voltage: 100-240 VAC @ 50-60 Hz - *you must use ONLY the provided power supply!*

Device Operating Voltage: 12 VAC

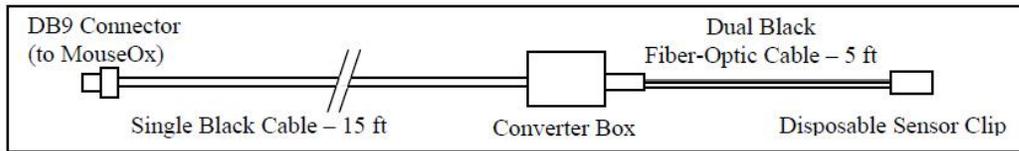
Max Operating Analog Current: 200 mA

Max Operating USB Current: 85 mA - MouseOx® Plus; 180 mA – STARR-Link™

(When using more than one of these devices, you must not operate the computer on batteries.)

OXY300-MRI SENSOR: SMALL-BORE MRI SENSOR INSTRUCTION SHEET

Small-Bore MRI Sensor Schematic

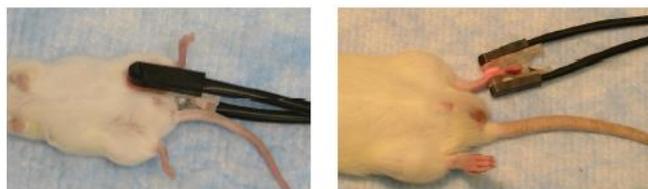


Usage Instructions:

1. Connect the DB9 Connector (9-pin connector) on the end of the thin black cable to the MouseOx® Control Box. Be sure that the MouseOx® software is not running when you do this.
2. Connect a disposable sensor clip to the fiber-optic cable. **You MUST USE a Mouse Thigh Clip for mice and a Rat Foot Clip for rats.** Place the protrusion on the end of the fiber-optic cable labeled “LED” into the hole on the clip half marked “LED,” then do the same for the side marked “PD.” Make sure that the fiber-optic cable is oriented so that it aligns over the handle as shown.



3. Connect the sensor clip to the animal:
 - a. **Mouse Thigh** – Place the clip on the thigh of a mouse as shown. For non-white fur, you **MUST** shave both locations of the sensor site. On white fur, shaving is not necessary, but will improve signal strength.
 - b. **Rat Foot** – Place the clip over the toes and locate it so that light shines through the **CENTER** of the foot. Support the clip/cable so that the animal’s foot is **NOT TWISTED** relative to its position before attaching the clip. The clip half marked “PD” should be on the bottom side of the foot.



4. After locating the clip on the animal, distribute the dual black fiber-optic cable such that it proceeds straight from the animal and that it **DOES NOT** twist the animal’s foot. Try to lay the sensor clip so that both the LED and PD cables are lying on the table.
5. Run the MouseOx® software (Rev 6.0 or higher). To get to the Monitor Subject screen, choose “Anesthetized Measurements” then “Mouse Thigh” or “Rat Foot” depending on your application.

Other recommended guidelines:

- **Keep the body (rectal) temperature of the animal above 36° C.**
- Make sure that Pulse Distention exceeds 20 m when operating the system. If Pulse Distention is less than 20 m, try to relocate the sensor clip to improve it or **warm the animal.**
- If you are having trouble getting a good signal, try shaving the sensor location if applicable.
- **The non-ferrous spring will weaken with multiple uses. An unreasonably low oxygen saturation measurement (a healthy subject with a sat of 88% or less) is a clear sign of an over-used spring. To prevent this, and to promote infection control, replace the clip before each MRI session.**

CAUTION: Converter box contains trace amounts of ferrous material. Keep it away from the magnet bore.