OXY-MRI – SpO_2 MODULE WITH SENSOR FOR HUMAN MRI

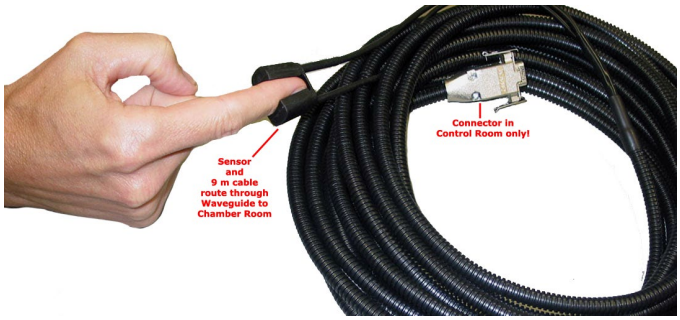
MRI Use: **Conditional**

Condition: Must use MR finger sensor and must route sensor and cable through waveguide; rated to 3.0 Tesla. (See Specifications for components.)

OXY-MRI is a stand-alone system for adult human pulse oximetry (SpO_2) in the MRI; it can also be used with a BIOPAC MP160/150 Research System.

The system includes a SpO_2 amplifier and an oximetry sensor for the finger, plus a signal isolation adapter INISOA and interface cables to connect to an existing BIOPAC AMI100D or HLT100C (high level transducer interface module) for MP Research Systems. Additional finger sensors are available as OXY-MRI-SENSOR.

The sensor cable material is a light conducting glass bundle made up of premium achromatic glass. There is no conductive cable running through the sensor cable except what is encased in the control unit side DB9 connector. The photo detector and LED are in that end and connected to the respective fiber optic ends.



Important! Do not operate this device with the oximeter control unit or oximeter sensor connector within the MR Chamber Room. The oximeter control unit and oximeter sensor cable DB9 connector should always be positioned in the MRI Control Room with the fiber optic cable and sensor entering the MRI Chamber Room through an available waveguide.

- Place oximeter control unit and oximeter sensor cable in the MRI Control Room, then feed the oximeter sensor cable from the MRI Control Room to the MRI Chamber Room through an available waveguide. Only introduce the oximeter sensor cable and integral SpO_2 finger sensor into the MRI Chamber Room.

! OXY-MRI is not intended for animal use.

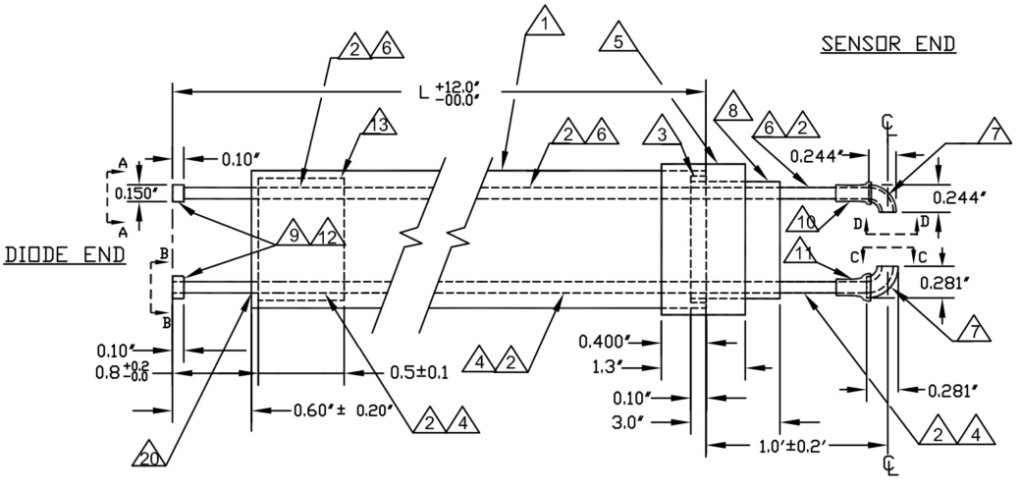
SYSTEM COMPONENTS

System includes: SpO_2 amplifier and pulse oximetry sensor for stand-alone use, plus INISOA signal isolator and dSUB9 cable to connect SpO_2 amp analog out to INISOA for use with a BIOPAC Research System.

Note: When simultaneously recording biopotential signals from a subject, or for safety in cases when the system is electrically connected to the subject (for recording or stimulation), a BIOPAC AMI100D or HLT100C (not included) is required to connect the INISOA to the MP160/150 unit. If more than one OXY-MRI signal is to be recorded using the AMI100D or HLT100C, an additional INISOA can be obtained by contacting BIOPAC. (Only one INISOA is included in the OXY-MRI system.)

If not recording biopotential signals, the OXY-MRI cable can be connected directly to the UIM100C.

OXI-MRI Cable Diode and Sensor Detail



SPECIFICATIONS

Oxygen Saturation Display Range: 0–100% SpO_2

Pulse Rate Range: 18–321 BPM

Saturation Accuracy (Arms): 70–100% ± 2 digits
Note: ± 1 Arms represents approximately 68% of measurements

Pulse Rate Accuracy:

no motion 18–300 BPM ± 3 digits
low perfusion 40–240 BPM ± 3 digits

Displays:
Pulse Strength: LED, Bar graph, tri-color segments
Alarm Indicator: LED, bi-color
Alarm Silenced: LED, amber
Numeric Displays: 3-digit, 7-segment LEDs, green
Low Battery: LED, amber

Analog Outputs:
SpO_2 Output Range: 0-1 VDC (0–100% SpO2), 1.27 VDC (out of track)
Pulse Rate Output Range: 0-1 VDC (0–300 BPM), 1.27 VDC (out of track)
Event Marker: 0 V (no event), 1 V (event occurred)
Accuracy: ± 2% (SpO_2), ± 5% (Pulse Rate)
Load Current: 2 mA maximum

Memory: 70 hours (assuming continuous operation)

Temperature
Operating: 0° C to +40° C (32° F to 104° F)
Storage/Transportation: -30° C to +50° C (-2° F to 122° F)

Humidity
Operating: 10–90% noncondensing
Storage/Transportation: 10–95% noncondensing

Altitude
Operating: up to 12,000 meters (40,000 feet)
Hyperbaric Pressure: up to 4 atmospheres

Mains Power Requirements: 100–240 VAC 50–60 Hz

Internal Power Requirements
Battery: 7.2 volt NiMH battery pack
Operating Life (fully charged battery): 16 hours minimum
Storage Life: 21 days minimum
Recharge Rate: 4 hours maximum

Dimensions: Approximately 219 mm (8.6”) W x 92 mm (3.6”) H x 142 mm (5.6”) D

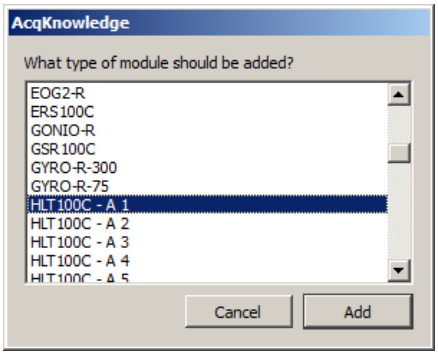
Weight: Approximately 900 grams (2 lbs) with battery

Warranty: SpO_2 amplifier: 3 years; pulse oximetry sensor: 90 days

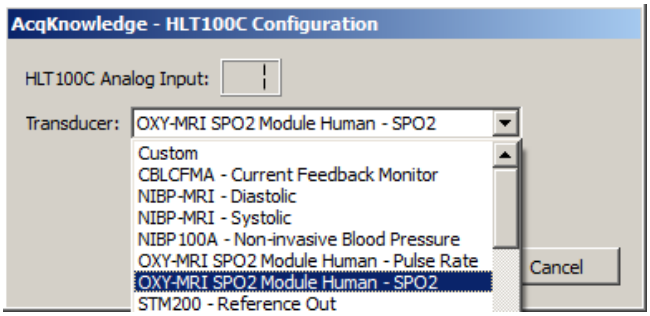
Classification per IEC 60601-1/CSA601.1/UL60601-1:
Type of Protection: Internally powered (on battery power)
Degree of Protection: Type BF-Applied Part
Mode of Operation: Continuous
Enclosure Degree of Ingress Protection: IPX2

ACQ*KNOWLEDGE* CALIBRATION (AMI100D or HLT100C)

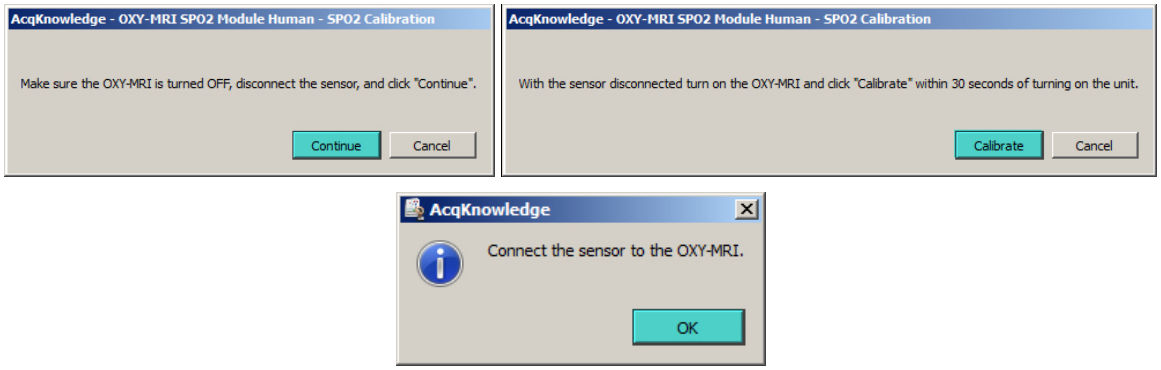
1. Launch Acq*Knowledge*. The "Add new module" dialog should appear. If it does not, choose "MP160/150 > Set Up Data Acquisition > Channels."
2. Choose "**AMI100D-A1 or HLT100C-A1**" from the module list and choose "Add."



3. Select "**OXY-MRI SPO2 Module Human-SPO2**" from the "Transducer" list and click OK.



4. Follow the OXY-MRI SPO2 calibration and sensor prompts in order of appearance. (Acq*Knowledge* 4.4.2 and higher only.)



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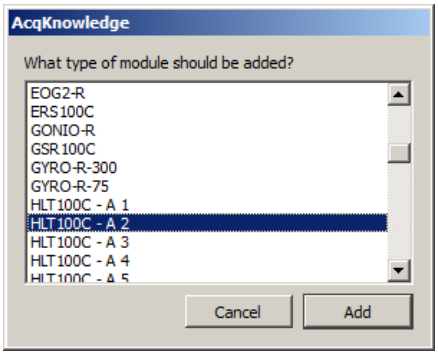
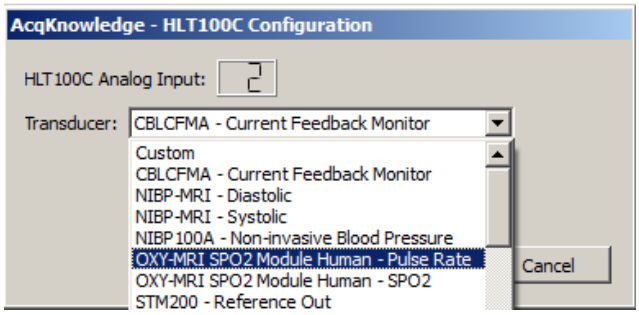
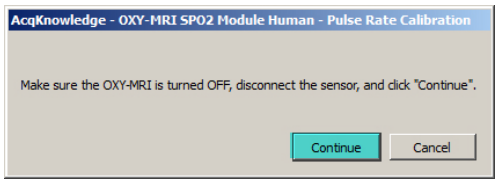
5. Choose “Add new module” and choose “**AMI100D-A2 or HLT100C-A2**” from the list and click “Add.”

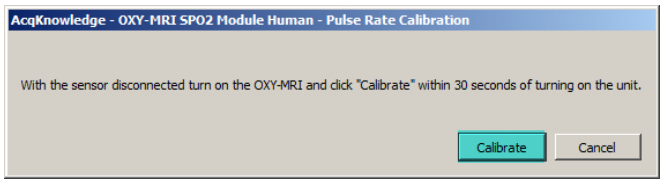


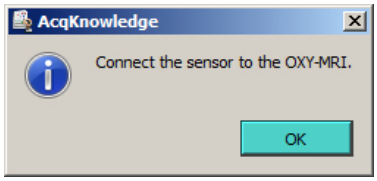
6. Select "**OXY-MRI SPO2 Module Human-Pulse Rate**" from the “Transducer” and click OK.



7. Follow the OXY-MRI Pulse Rate calibration and sensor prompts in order of appearance. (Acq*Knowledge* 4.4.2 and higher only.)







If the sensors are not properly connected, the following dialog will appear. Check the connections and click “Retry.”

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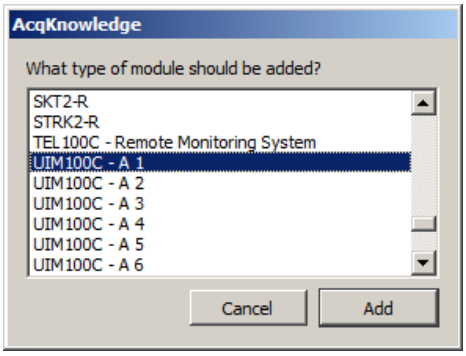
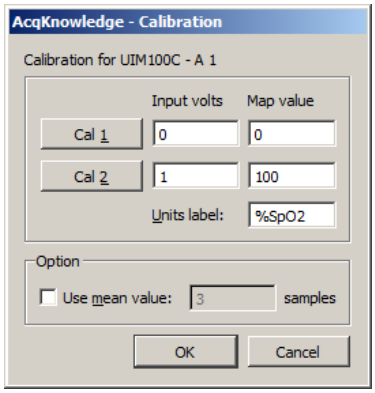
ACQ*KNOWLEDGE* CALIBRATION (UIM100C)

1. Launch Acq*Knowledge*. The "Add new module" dialog should appear. If it does not, choose "MP160/150 > Set Up Data Acquisition > Channels."
2. Choose "**UIM100C-A1**" from the module list and choose "Add."



3. Choose "Custom" from the "Transducer" list and click OK to open the Scaling dialog.
4. Enter Cal 1, Cal 2, and Units Label as shown below and click OK.



5. Choose "Add new module" and choose "**UIM100C-A2**" from the module list, and click "Add."
6. Choose "Custom" from the "Transducer" list and click OK to open the Scaling dialog.
7. Enter Cal 1, Cal 2, and Units Label as shown below and click OK.