PORTABLE GAS INDICATOR

MODEL FI-21

FOR ANESTHETIC VAPORIZER CALIBRATION

DOES IT ALL!

Latest development in the line of RIKEN GAS INDICATORS based on the optical interferometer principle.

- Digital LCD Readout
- You select base gas (O₂ or Air), Halothane, Isoflurane, Desflurane or Sevoflurane
- Built in push button sample pump

The NEW RIKEN F1-21 makes all calculations and adjustments for range, anesthetic, and conversion factors automatically.

- In the anesthetic application, the function of the FI-21 Riken Gas Indicator is the same as the other models with the advantage of **direct digital readout**, selectable anesthetic gas, and base gas (air or O₂), electric sample pump and automatic set up for any or all of the previous models of Riken Gas Indicators.
- Memory: Stores up to 100 readings with time and date.
- Power: 4 “C” size alkaline cells for operating optical system illumination electronics and sample pump. Average life of battery, 80 hours.
- Direct Readout of % volume measurement of commonly used anesthetics on LCD display.
- Automatic accommodation for selected anesthetic base gas and scale range and **no conversion factors or calculation required**.
- Self checking readout on display.

**SPECIFICATIONS**

| Measuring gas | O₂ base: Halothane, Isoflurane, Sevoflurane, Desflurane  
                | Air base: Halothane, Isoflurane, Sevoflurane, Desflurane |
|---------------|-----------------------------------------------------------|
| Measuring ranges | The number in ( ) is the minimum digit. [Unit: vol%] |
|                | Base gas | Meas. gas | Halothane | Isoflurane | Sevoflurane | Desflurane |
| O₂ base        | 0~6      | (0.01)    | 0~8       | (0.01)    | 0~10       | (0.01)    |
|                | 0~20     | (0.02)    | 0~20      | (0.02)    |             |           |
| Air base       | 0~6      | (0.01)    | 0~8       | (0.01)    | 0~10       | (0.01)    |
|                | 0~20     | (0.02)    |           |           |             |           |

<table>
<thead>
<tr>
<th>Power source</th>
<th>C size alkaline battery (4 ea.), or AC adapter (Option)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>AIR CAL. value</th>
<th>AIR CAL value = Indication when the instrument detects the fresh. [Unit: vol%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base gas</td>
<td>Meas. gas</td>
</tr>
<tr>
<td>O₂ base</td>
<td>1.57</td>
</tr>
<tr>
<td>Air base</td>
<td>0.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indication accuracy</th>
<th>Within ±3% of the reading value ± 1 digit (Air base)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Opting temp./Hum.</th>
<th>5~35°C, Below 80% RH</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Battery life</th>
<th>Approx. 20 hours in continuous (without sampling)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Outputs</th>
<th>Data logger, Analog output 0~1 V</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Data logging function</th>
<th>Concentration reading with Month/Day/Year and Time</th>
</tr>
</thead>
</table>

| Maximum recording number: Up to 100 |

<table>
<thead>
<tr>
<th>Dimensions/weight</th>
<th>Approx. 200 (W) x 80 (H) x 145 (D) (mm) / Approx. 2kg</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Standard access.</th>
<th>Sampling tube, Carrying case, Sampling &quot;T&quot; piece</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Optional access.</th>
<th>AC Adapter</th>
</tr>
</thead>
</table>

*Specifications subject to change without notice.*
## Anesthesia Machine

### #CZ-MAG1 Portable Anesthesia Machine w/ Sevoflurane Vaporizer

**DIMENSIONS**

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>23 inches</td>
</tr>
<tr>
<td>Depth</td>
<td>23 inches</td>
</tr>
<tr>
<td>Width</td>
<td>17 inches</td>
</tr>
</tbody>
</table>

**Weight**
- Free-Standing: 45 lbs
- Enclosed in Carrying Case: 100 lbs

**Machine Materials**
- Aluminum, brass and plastic

**Carrying Case Materials**
- Plastic, military grade

**Operating Temperature Range**
- 35° F to 110° F

**Required Gas Supply Sources**
- O2 Main and Cylinders: 38 to 70 psi (50 psi is optimal)
- Air and/or Air Compressor: 38 to 70 psi (50 psi is optimal)
- Oxygen Concentrator: 3 to 10 psi

**Flowmeter Fresh Gas Flow**
- 1 to above 20 lpm (each flowmeter)

**Oxygen Flush Valve**
- Recessed, self-closing, push-button, color coded and labeled, provides 45-55 lpm constant flow, while push-button is depressed

**CO2 Absorber System**
- King Systems KAB-9 (refillable) or KAB-1 (pre-filled/disposable)

**CO2 Absorber Canister Capacity**
- 400 grams soda lime

**Directional Valves**
- Built in the CO2 Absorber

**CO2 Absorber Holding Bracket**
- Plastic, secured with knob to main frame of machine

**Bag-Ventilator Switch/PRV and Scavenger Outlet Port**
- Hand-operated selector switch and rotating knob for PRV and scavenging outlet

**Bellows**
- Latex free, upward inflating, range from 0 to 1.6L

**Bellows Pressure Relief**
- Pre-set at 60 cm H₂O

**Common Gas Outlet**
- Quick-connect, size-indexed

**Tubing Circuit**
- King Systems F-360-61 or any standard anesthesia circle circuit

**Gas Pressure Hoses**
- DISS and thread indexed, female connectors at both ends

**Gas Inlet Manifold**
- DISS and thread indexed, male connectors with one-way valves

**Gas Inlet Manifold Filters**
- Located behind Manifold Air and O2 inlet male connectors

**Gas Inlet Pressure Regulators**
- Main supply cylinder
- Safety back up cylinder
- DISS/thread indexed for O2
- Pin-indexed, yoke mounted for “D” and “E” cylinders for O2

**Oxygen and Air Supply Gauges**
- 0-300 psi range, color coded and labeled

**Oxygen Supply Alarms**
- Main and safety back-up
- O2 Concentrator
- Alarm power source
- Alarm on/off
- Labeled toggle switch located on body of alarm box

**Air and O2 Flowmeters**
- Calibrated and scaled 0-10 lpm, color coded, O2 flowmeter has a fluted control knob for easy identification by touch

**Oxygen Concentrator**
- To power O2 flowmeter only

**Air Compressor**
- May be used to power ventilator and air flowmeter

**Oxygen Analyzer/ Monitor**
- OM-25-ME (or equivalent)
  - Sensor life expectancy 2 years under normal conditions

**Oxygen Analyzer Power Source**
- 2 each AA batteries, life expectancy approx. 3000 use hours

**Auxiliary O2 Flow Selector**
- Scaled 0-10 LPM in set increments, used for pre/post anesthesia

**Vaporizer**
- Penlon SigmaDelta Series, bolt (cage) mounted, temperature compensated, very low maintenance

**Airway Pressure Gauge**
- Dual scaled in cm H₂O and mmHg, located on front panel of ventilator

**Pressure Gauge Tubing**
- Attached to bag/vent switch arm

**Mechanical Ventilator**
- Pneumatically powered, time cycled, volume constant, pressure variable
- Pre-set to maximum of 60 cm H₂O located in main vent box
  - Volume Range: 0 to 1.6L
  - Insp. Flow Range: 0 to .90 lps
  - Insp. Time Range: 0.2 to 3.0 seconds
  - Esp. Time Range: 0.2 to 30 seconds

**Ventilator Gas Power Requirements**
- 40 to 70 psi, 50 psi optimal
- Use toggle switch to select gas source

**Waste Gas Scavenger**
- Positive and negative relief valves, 1L reservoir bag, vacuum control knob

**Total Machine Gas Leakage**
- @30 cmH₂O - 0- ml/Min
- @80 cmH₂O - 0- ml/Min

**Internal System Compliance**
- @20 cmH₂O 1.1 ml/cmH₂O
- @40 cmH₂O 1.3 ml/cmH₂O

**Internal System Resistance**
- @1.0L/sec gas flow 4.11cmH₂O
- @0.5L/sec gas flow 1.80cmH₂O

**APL Valve Pressure Drop**
- @3.0L/min gas flow 0.12cmH₂O
- @30L/min gas flow 1.03cmH₂O

**Storage**
- Indoor: +160° F Allow unit to warm to room temp.
- Outdoor: -30° F

---

**MERCURY MEDICAL®**

(800) 835-MMED • (727) 573-0088 • FAX (800) 990-6375