Alaris® EtCO₂ Module Pocket Guide

Setting Alarm Limits:
1. Press CHANNEL SELECT key.
2. Press LIMITS.
3. Select limit parameter to be changed.
4. Enter a numeric value using keypad or up/down arrow keys.
5. Press CONFIRM.
6. Press MAIN SCREEN.

Trend Data:
1. Press CHANNEL SELECT key.
2. Select TREND.
3. Press PAGE UP and PAGE DOWN to navigate through trend data pages. To move cursor bar press up or down arrow keys.
4. Press ZOOM to change time period.
5. To exit press EtCO₂ Main.
6. Press MAIN SCREEN.

PCA/EtCO₂ Trend Data:
Note: This function requires use of Alaris® PCA module.
1. Press CHANNEL SELECT key.
2. Press OPTIONS.
3. Select PCA/EtCO₂ Trend Data. Navigate as described above in section titled Trend Data.
4. To exit press EtCO₂ Main.
5. Press MAIN SCREEN.
6. Press MAIN SCREEN.

Operator Precautions: For proper operation of the Alaris® System (formerly Medley® System) the user must be familiar with the features, disposables, administration sets, set-up and programming.
This guide includes selected information and suggestions and is not intended to be comprehensive instructions for the set-up and operation of the Alaris® System. For complete instructions along with Warnings and Cautions, refer to Alaris® System Directions for Use (vii).

Change Waveform Height:
1. Press CHANNEL SELECT key.
2. Press OPTIONS.
3. Select WAVEFORM HEIGHT.
4. Select 60mmHg or 99mmHg.
5. Press MAIN SCREEN.

Change Waveform Time Scale:
1. Press CHANNEL SELECT key.
2. Press OPTIONS.
3. Select WAVEFORM TIME SCALE.
4. Select 5 or 10 seconds (for lower respiratory rates select 10 seconds).
5. Press MAIN SCREEN.

Pre-Silencing Alarm:
1. Press SILENCE to pre-silence monitoring alarms for 2 minutes.
Note: Infusion alarms will not be silenced.

Troubleshooting
Clearing Disposable Alarm
The module is trying to clear the clogged disposable. If cleared, the module will automatically resume monitoring. If unable to clear, the module will go into a DISCONNECT OCCLUDED DISPOSABLE alarm.

Disconnect Occluded Disposable Alarm
The disposable is occluded or needs to be reset. First try disconnecting disposable and then reattach. If the device again reads DISCONNECT OCCLUDED DISPOSABLE, obtain and attach a new disposable.

Autozero In Progress Alarm
The module is performing an autozero calibration. During this time no data is obtained. Monitoring will automatically resume when completed. No intervention is necessary.

Low EtCO₂ Alarm
Possible causes:
• Patient has true measurement of low EtCO₂
• Disposable not correctly attached to patient or securely connected to module
Possible responses: Check disposable connections and assess patient and follow hospital protocol actions.

High EtCO₂ Alarm
Possible causes:
• Patient has true measurement of high EtCO₂
• Fever or hypermetabolic state
• Disposable is not properly attached to patient
Possible responses: Check disposable and compare value to baseline and follow hospital protocol actions.

High FICO₂ Alarm
Possible causes:
• Patient is inspire exhaled CO₂ or disposable not properly attached to patient
• O₂ flow to mask may not be properly attached (if patient is wearing an O₂ mask)
• O₂ flow to mask may have stopped
• Drapes or covers may be over patient’s face
Possible responses: Check disposable, O₂ flow, mask and/or drape position and follow hospital protocol actions.

No Breath Detected Alarm
Possible causes:
• Patient is not breathing
• Disposable is not properly attached to patient and/or device
• Disposable is not detecting exhaled breath (shallow breath)
Possible responses: Check disposable and assess patient. Consider using different disposable type and follow hospital protocol actions.

Low EtCO₂ Alarm
Possible causes:
• Patient has true measurement of low EtCO₂
• Disposable not correctly attached to patient or securely connected to module
Possible responses: Check disposable connections and assess patient and follow hospital protocol actions.

High EtCO₂ Alarm
Possible causes:
• Patient has true measurement of high EtCO₂
• Fever or hypermetabolic state
• Disposable is not properly attached to patient
Possible responses: Check disposable and compare value to baseline and follow hospital protocol actions.

High FICO₂ Alarm
Possible causes:
• Patient is inspire exhaled CO₂ or disposable not properly attached to patient
• O₂ mask may not be properly attached (if patient is wearing an O₂ mask)
• O₂ flow to mask may have stopped
• Drapes or covers may be over patient’s face
Possible responses: Check disposable, O₂ flow, mask and/or drape position and follow hospital protocol actions.

No Breath Detected Alarm
Possible causes:
• Patient is not breathing
• Disposable is not properly attached to patient and/or device
• Disposable is not detecting exhaled breath (shallow breath)
Possible responses: Check disposable and assess patient. Consider using different disposable type and follow hospital protocol actions.
The following are examples of common ETCO2 waveforms. The waveform trends are examples only and do not represent all potential abnormal waveforms. Analysis of these waveform trends may provide an early indication of the noted possible causes. The associated possible responses are suggestions only and are not meant to replace current clinical practice or hospital protocols. Always consult hospital protocols. Abnormal waveforms are not always associated with alarms.

### Normal Waveform (Normal Ventilation; 35-45 mmHg)
- **Clinical findings:**
  - Normal breathing, Normal ETCO2
- **Possible Responses:**
  - Always follow hospital protocols
  - Assess ABCs (Airway, Breathing, Circulation)
  - Decrease pain stimulus or encourage calm
  - Notify RT or MD

### Hyperventilation (Abnormal Waveform)
- **Clinical findings:**
  - Rapid breathing, Low ETCO2
- **Possible Causes:**
  - Increase in pain level or splitting area of pain
  - Increase in anxiety or fear
  - Respiratory distress or shortness of breath
- **Possible Responses:**
  - Always follow hospital protocols
  - Treat cause of increased respiratory rate
  - Assess ABCs (Airway, Breathing, Circulation)
  - Decrease pain stimulus or encourage calm
  - Notify RT or MD

### Hypoventilation (Abnormal Waveform)
- **Clinical findings:**
  - Slow breathing, High ETCO2
- **Possible Causes:**
  - Over medication or increased sedation
  - Snoring or possible obstruction
- **Possible Responses:**
  - Always follow hospital protocols
  - Access ABCs
  - Assess sedation level
  - Stimulate patient
  - Notify RT or MD

### Hypoventilation with Shallow Breathing (Abnormal Waveform)
- **Clinical findings:**
  - Slow breathing, Low ETCO2 followed by deep breath (see pointing arrow)
- **Possible Causes:**
  - Over medication or increased sedation
  - Low tidal volume
- **Possible Responses:**
  - Always follow hospital protocols
  - Assess ABCs
  - Maintain patient airway
  - Encourage patient to take deep breaths
  - Notify RT or MD

### Partial Airway Obstruction (Abnormal Waveform)
- **Clinical findings:**
  - Irregular breathing, possible audible sound or snoring, ETCO2 may be above or below baseline
- **Possible Causes:**
  - Poor head or neck alignment
  - Over medication or sedate
- **Possible Responses:**
  - Always follow hospital protocols
  - Assess ABCs
  - Encourage patient to take deep breaths
  - Perform a head tilt or chin lift; Check position of cannula
  - Notify RT or MD

### No Breath (Abnormal Waveform)
- **Clinical findings:**
  - Sudden loss of ETCO2 reading, Very shallow or no respiratory rate pattern observed
- **Possible Causes:**
  - No Breath or Apnea
  - Very shallow breathing
  - Over medication or sedate
  - Displaced cannula
- **Possible Responses:**
  - Always follow hospital protocols
  - Assess ABCs
  - Stimulate patient
  - Open airway
  - Notify RT or MD

### Hypoventilation with Shallow Breathing (Abnormal Waveform)
- **Clinical findings:**
  - Slow breathing, Low ETCO2 followed by deep breath (see pointing arrow)
- **Possible Causes:**
  - Over medication or increased sedation
  - Low tidal volume
- **Possible Responses:**
  - Always follow hospital protocols
  - Assess ABCs
  - Maintain patient airway
  - Encourage patient to take deep breaths
  - Notify RT or MD

### Hypoventilation (Abnormal Waveform)
- **Clinical findings:**
  - Slow breathing, High ETCO2
- **Possible Causes:**
  - Over medication or increased sedation
  - Snoring or possible obstruction
- **Possible Responses:**
  - Always follow hospital protocols
  - Access ABCs
  - Assess sedation level
  - Stimulate patient
  - Notify RT or MD

### Normal Waveform (Normal Ventilation; 35-45 mmHg)
- **Clinical findings:**
  - Normal breathing, Normal ETCO2
- **Possible Responses:**
  - Always follow hospital protocols
  - Assess ABCs (Airway, Breathing, Circulation)
  - Decrease pain stimulus or encourage calm
  - Notify RT or MD

References:

The associated possible responses are suggestions only and are not meant to replace current clinical practice or hospital protocols. Always consult hospital protocols. Abnormal waveforms are not always associated with alarms.