# Atlas Monitor Outline
# Train the Trainer

## A. ATLAS Monitor

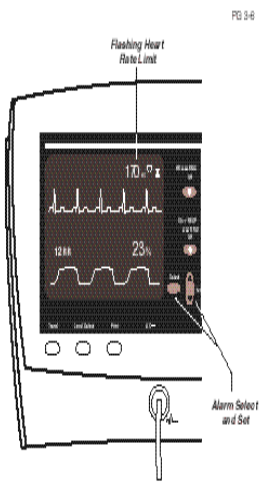
1. Atlas Monitor is not designed for use on children younger than 3 years old.
2. Weight: 9.5lbs to 13.2 lbs, depending on configuration
3. Variable parameters with each Model
   a. **Model 621xx**:
      $SpO_2$, $SpO_2$ waveform
      Pulse Rate
      NIBP: Systolic, Diastolic, MAP (Mean Arterial Pressure)
      ECG Waveform, Heart Rate
      Printer (optional)
   b. **Model 622xx**:
      All features of Model 621xx plus:
      Impedance Respiration
      Patient Temperature by skin probe YST 400 series
      Battery Operation
      PC Communication
      Remote Nurse Call
      Printer (optional)
   c. **Model 623xx**:
      All features of Model 622xx plus:
      End Tidal $CO_2$
      Breath Rate from $ETCO_2$
      Printer (standard)

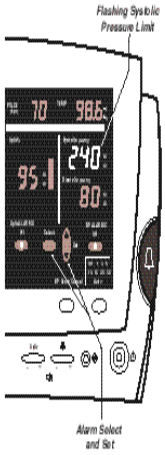
## B. Battery Life

1. Rechargeable sealed lead acid battery, and leak-proof.
2. Model 621xx does not have a battery - requires AC connection for power.
3. Approximately 1 hr. of multi-parameter monitoring, when battery is fully charged; approximately 45 min. of battery life if monitoring continuous $ETCO_2$.
4. Charge time is 5 hrs for 80% capacity; suggest 24 hrs for 100% capacity.
5. Low Battery Indicators:
   a. Low Battery—10 min left, chimes every 2 min., message on screen.
   b. Very Low Battery—5 min. left, chimes every 1 min., message on screen
   c. Depleted Battery—1 min. left, chimes "Instrument Problem" Alarm continuously until automatic shutdown occurs, prints Trend report.
6. If ATLAS Monitor shuts down due to depleted battery, it does not save settings previously set for any alarm parameter.
7. ATLAS Monitor should always be charging unless it is being used for short-term transport.
8. If the ATLAS is operating on AC, the **"AC~"** indicator light will be lit.

## C. Anatomy of ATLAS Monitor

1. Right Side of Monitor: usable handle
2. Back of Monitor: AC plug connection, RS232 port
3. Top of Monitor: printer, if applicable
4. Bottom row of buttons, right to left:
   a. **On/Off Power** button
   b. **Clock** button: Menus to
      - Change **Date/Time**
      - **Advanced Configuration**
      - **Save Alarm Settings**
   c. **Alarm Volume Control**
   d. **SpO2 Alarm Volume Control**
   e. **Temperature Probe** port
   f. **ECG Cord** attachment port
   g. **NIBP**
   h. **SpO$_2$ Sensor** attachment
   i. **CO2 Water Trap** port
5. Next row of buttons:
   a. **Auto** (choose time intervals for NIBP)
   b. **BP Start/Cancel** (start or cancel BP inflation)
   c. **AC Power** indicator
   d. **Freeze/Print:** print Trend data or waveforms
   e. **Lead Select**
   f. **Trend:** 144 data points; lost when powers down
6. CRT Screen/Buttons
   a. **Select/Set**
   b. **CO2/ Resp Alarms**
   c. **Heart Rate Alarms**




## D. Turn ATLAS Monitor ON:

1. **Power ON/ Standby** button on lower right corner
2. On Power-up, a lit **"AC~ "** indicator means the monitor is plugged into a wall outlet and the battery is being charged.
3. When first turned **ON**:
   a. All Alarms are enabled, and Alarm limits are set at default values
   b. All the Trend Data is cleared

## E. Front Panel

1. Left side displays on CRT Screen: Waveforms, Numeric readings, and Trend Data
2. Right side displays Vital Signs measurements in green and red LED's.
3. Each side responds to adjacent **SELECT** or **SET** buttons used for setting Alarm Limits.
4. Each side has **Alarm OFF** buttons, which ***Turn Off*** each individual Alarm.

## F. Menu

1. Set **Date and Time**
   a. Press **Date and Time** button (labeled with the **clock icon**)
   b. Use **Select** button to highlight day, month, year, hours, minutes, seconds.
   c. Use **Set** to scroll through the values for each setting

d. Stop pressing the **Set** button when the correct value is shown
e. Use **Select** button to highlight the next item you want to set, and repeat.
f. Press **Date/Time** button again to return to the waveform screen when the date and time are correct.

2. **Other Options menu** buttons
   a. **Trend**
      The Trend button accesses the Advanced Configuration menu, which allows other settings to be changed.
   b. **Lead Select**
      The Lead Select button accesses the Service Mode screen, which allows a qualified technician to service various aspects of the monitor. *Note*: Service Mode is never used by the Clinician and is not to be used in any patient-oriented operation of the monitor.
   c. **Print (or Freeze)**
      The Print button (or Freeze in those monitors without a printer) saves the current alarm settings as set by user, which are used instead of the defaults when the instrument is turned on.
   d. **$CO_2$/RESP ALARMS Off**
      The $CO_2$/Resp Alarms Off button initiates the process of the $CO_2$ Reset.
3. To exit the menu, press the **Date/Time** button again.

## G. The Advanced Configuration Menu

1. Access Advanced Configuration, press the **Date/Time** button, and then **Trend** Button.
2. Press either **Select** button to highlight the parameter you want to change.
3. Press either **Set** button to choose the value you want for the parameter.
4. Press either **Select** to move on to the next parameter , or
5. Press **Trend** to exit the menu and return to the waveform display.
6. Advanced Configuration Details: refer to the Operator's Manual for menu items and possible settings. Some options may not be present on your model.

## H. NIBP

1. Attach proper BP cuff and make sure the "AIM" marker on the inside of each cuff is covered by the "Range" markings on the outside of the cuff. If not, change to appropriate size cuff. Ensure proper positioning and support of limb.
2. Manual BP: push **BP Start/ Cancel** button to obtain non-invasive Blood Pressure.
3. Push **BP Start/ Cancel** Button to initiate NIBP reading any time; also toggles to Cancel
4. Taking a manual BP will not interrupt the intervals if Auto BP has been chosen.
5. Push **AUTO** button to measure NIBP at a given time intervals—choose intervals of 1, 3, 5, 10, 15, 30, or 60 min, or X which denotes OFF in the **AUTO** Mode. The first Auto BP reading will begin 20 seconds later (without touching a button)
6. BP Cuff will inflate to default pressure of 160mmHg. If the pre-set pressure is too low to measure the Systolic pulse, the ATLAS will repeatedly increase cuff pressure by 40mmHg and attempt BP measurements again. Cuff inflation ranges from 120-180 mmHg.
7. BP measurement will be posted on the right side of the front panel, in green numerics.
   Systolic Range= 60-250 mmHg, (8 to 33kPa)
   Diastolic Range= 30-160 mmHg, (4 to 21 kPa)
   MAP Range= 40-190 mmHg,

8. **MAP** is calculated from systolic and diastolic measurements. It is displayed above ECG tracing.
9. **Heart Rate** may be determined at time of BP reading; range is 40-200 beats per minute.
10. **Trend** data info will record with every BP or every 15min.; max 144 samples or 36 hrs.

## I. $SpO_2$

1. Take Oximetry and Pulse Rate measurements with the appropriate sensor.
2. Reusable fingerclip sensor is provided, but a variety of compatible sensors are available.
3. Oximetry pulse volume is displayed as a vertical bar graph, called the Plethysmograph, located beside the $SpO_2$ % display on the right side of the Monitor.
4. The $SpO_2$ pulse tone gives an audible indication of pulse rate and oxygen level.
5. The pulse tone ***Volume*** can be controlled by a button on the lower right panel. The button is located below the SpO2 display, and labeled with a speaker icon and **$SpO_2$.**
6. Oximetry waveform can be selected as a second trace in Advance Configuration menu.
7. To see a continuous $SpO_2$ waveform, press the small clock button on the bottom right of the monitor. Use the up and down arrows to scroll through the options in order to select SpO2 as your secondary waveform.
8. The Oxygen level is displayed in red numbers as a percentage, within about 5 seconds.
9. The Pulse Rate is displayed in green numbers, which may sometimes differ slightly from the Heart Rate even though they both measure beats/minute (bpm). This is normal. HR Range is 20-250 beats/minute.
10. Limitations: dirty sensor, dark nail polish, poor circulation, tremors, cold, bright light.

## J. ECG

1. One lead of ECG waveform is always displayed on the upper half of the screen.
2. The selected ECG lead is shown to the right of the Heart Rate
3. Press **Lead Select** to change the lead display. The ECG function can use either: 3 lead wires (I, II, III) 5 lead wires (I, II, II, aVR, aVL, aVF, and V).
4. 3 or 5 lead setting is selected in the Advanced Configuration Menu. ***Note***: When using 3 leads, the **ECG lead** must be set correctly. Incorrect results and noisy waveforms can be obtained if the system is configured for 5 leads when using 3 leads.
5. The Heart Rate is displayed above the right end of the top of the waveform, near the Heart symbol. Heart Rate range is 21-249 beats per minute.
6. If the ECG is inactive for any reason, the Heart Rate display will be dashes "---" and the Heart Rate alarm will respond to the Pulse Oximetry rate.

## K. Tips for Successful ECG Monitoring

1. Using pre-gelled silver/silver chloride electrodes is recommended. Electrodes with dissimilar metals can prevent obtaining an ECG tracing and can compromise recovery time after defibrillation.
2. Prepare electrode sites (skin preparation):
   a. Remove hair from electrode sites. Shave or clip hair according to hospital policy.
   b. Thoroughly clean skin where electrodes will be attached and lightly rub dry.
   c. Use soap and water, isopropyl alcohol, or special skin prep pads to cleanse the skin.
   d. To avoid allergic reactions to electrodes, refer to the electrode manufacturer's guidelines.
3. Proper electrode placement
   a. Increased artifact due to patient movement greatly affects telemetry monitoring.

b. Place electrodes in flat areas; avoid fatty/bony areas and major muscles.

4. Suggested lead placement for 3 or 5 lead cable:
    - RA (white)— Place near right mid-clavicular line directly below the clavicle.
    - LL (red)— Place near 7th intercostal space in line with or lateral to the midpoint of the left clavicle.
    - LA (black)—Place near left mid-clavicular line directly below the clavicle.
    - RL (green)—Place near 7th intercostal space in line with or lateral to the midpoint of the right clavicle.
    - C (brown)—Place in the intercostal space equivalent to the V1, V2, V3, V4, V5, or V6 position you want to monitor.
5. Always attach lead wires to electrodes before applying to patient. Confirm that the ATLAS displays the ECG waveform, heart rate, and other patient data.
6. Electrodes should be replaced when loose, daily after bathing and/or according to your facility's policy.
7. Contributors to a poor ECG tracing:
    - Not properly supporting a patient's monitor cable
    - Dried electrodes
    - Placing an electrode on site affected by motion
    - Hair at electrode sites
    - Using electrodes with dissimilar metals

    ***Note:*** Use stress loops to help decrease artifact

## L. Temperature

1. Temperature is measured on the skin surface with a skin sensor for continuous readings.
2. Attach skin probe close to or on the torso for the best reading. It is imperative that the flat surface on the probe must make full flat contact with skin, and tape down.
3. There are no rapid oral, axillary or rectal readings available for the ATLAS Monitor.
4. Temperature display is blank until a Temperature probe is detected. If the probe becomes disconnected from the patient or the monitor, the Temp display will show steady dashes "---", but no Alarm will occur.
5. There are no Temp Alarm limits or audible Alarms. Temp is usually 1-2 degrees lower.
6. Temp is displayed in green numbers, located in the upper right-hand corner.
7. To choose Temperature in F` or C`, pre-set in the Advanced Configuration menu.
8. Temp Range is 17` to 50` C or 62.6`to 122` F.

## M. Impedance Respiration (Models 622xx and 623xx)

1. Respiratory Rate is measured with ECG Leads, waveform derived from Lead I.
2. Impedance Respiration is sensitive to patient movement, position at Lead I (RA-LA).
3. Waveform is configured to be displayed as second tracing in Advanced Configuration
4. The Respiration Rate is displayed above the right side of the waveform.
5. **Warning**: Impedance Respiration rate measurement and alarm capability are active ONLY when the second trace option is set to **Respiration**. Should the operator change from viewing the Respiration waveforms and breath rate to another selection ($SpO_2$, $CO_2$ or ECG), the Respiration rate monitoring and the alarm capability will be disabled. This occurs even if the ECG cable is still inserted.

**N. Monitoring CO2, Respiration Rate, and the End –tidal $CO_2$ Waveform (Model 623xx)**

1. Connecting the End Tidal CO2 Sample Tube
   a. The Carbon Dioxide concentration is measured with a sample tube using a nasal cannula adapted for sidestream CO2 measurement. CO2 connectors are available for direct connection to ET tubes/LMAs.
   b. Attach cannula to the patient's nose so that the tubes enter the nostrils.
   c. Direct the tubing along both cheeks and over the patient's ears.
   d. Connect the sample tube to the watertrap.
   e. Plug the watertrap into the front panel of the monitor at the connector for $CO_2$ analysis. Be sure to push it in until it is firmly seated.
2. $CO_2$ can be displayed above the right end of the trace; in units of % mmHg or kPa.
3. The lower trace displays the $ETCO_2$ waveform, although you can display Impedance Respiration, ECG, or $SPO_2$ in its place if desired.
4. The Respiration Rate is displayed above the left end of the trace.
5. There are high and low alarm levels for Respiration Rate and for $CO_2$ concentration.
6. The watertrap must be installed for the $CO_2$ displays to be active, otherwise the second cascading ECG trace will appear.
7. **ETCO2** and breath rate measurement and alarm capability are active ONLY when the second trace option is set to **$CO_2$.** Should the operator change from viewing the $ETCO_2$ and breath rate waveforms and data to another second trace selection as (**$SpO_2$**, **Respiration** or **ECG**) the **$CO_2$** and breath rate monitoring and alarm capability will be disabled. This occurs even if the watertrap and cannula are inserted into the monitor.
8. $CO_2$ Scrubber has an indefinite lifespan when used at the normal rate of one $CO_2$ reset every month and one $CO_2$ calibration every 6 months. The Scrubber can be disposed of as normal non-hazardous waste.
9. $ETCO_2$ watertrap should be replaced after 6 hours of use. The watertrap should be replaced in accordance with hospital Infection Control policies for disposables. If the watertrap is full, an alarm will sound and the message " Replace $CO_2$ watertrap" will appear. The message "CO2 watertrap occluded" may also appear. If it occurs, change the watertrap, and handle as a biohazard material.
10. On Model 623xx, you may see a message indicating that a **$CO_2$ Reset** is recommended.
11. To perform **$CO_2$ Reset**:
    a. Press the **Date/ Time** button on the lower right of the monitor.
    b. The Set Date and Time and Other Options menu will be displayed.
    c. Select the **Reset $CO_2$** selection by pressing **$CO_2$/RESP ALARMS Off** Button. This will access a screen titled CO2 Reset. Follow instructions on the screen.
    d. You will be told to remove the $CO_2$ watertrap.
    e. You will be told to install the **$CO_2$ Scrubber** into the $CO_2$ watertrap socket. The Scrubber looks similar to a watertrap, but is filled with white granules.
    f. The Scrubber must be attached to the watertrap.
    g. Remove the tubing from watertrap and attach the Scrubber to watertrap.
    h. Insert the watertrap Scrubber combination into the watertrap socket.
    i. There may be a message indicating a 5-minute **Warming up** period.
    j. The system will report that it is **Sampling**, then **Reset Complete**.
    k. Remove the watertrap/Scrubber from the watertrap socket.
    l. Detach the Scrubber from the watertrap and reattach the tubing.
    m. Replace the watertrap in the watertrap socket.
    n. Press **Trend** to return to the normal screen.

**O. Trends**

1. Trend Data is captured every time blood pressure is measured, for automatic or manual.
2. Trend Data is automatically captured every 15 minutes if blood pressure intervals are longer, or blood pressure is not used.
3. Push the **Trend** button to see the Trend data. Press **Print** to print Trend data on screen.
4. Scroll through the Trend Data with either **Set** button.
5. Push **Trend** again to return to the waveform display.
6. The **Trend** memory will hold up to 144 lines of Trend Data, which is 36 hrs if data is captured every 15 min.
7. Trend data is erased when the monitor is turned OFF.

**P. Managing the Alarms**

1. Four types of events can cause an alarm:
   a. **Patient Alarm** means that the patient's measurement is outside the limits you set. That measurement display will flash and, if measurement is not suspended or silenced, an audible alarm will sound.
   b. **Measurement Invalid Alarm** means the Instrument is working properly but the measurement is invalid or the actual patient vital sign is outside the range of measurement of the Atlas Monitor. This causes an audible alarm and message on the screen, and the display turns to dashes"---"which flash.
   c. **Instrument Problem Alarm** means the instrument has found an internal problem. This alarm is very rare. The Atlas Monitor conducts an Internal Self-Check when it is turned on. They produce an audible alarm, a message on the screen, and/or the affected measurement display will be blank. An alarm will occur if the AC power is interrupted when the Atlas model 621xx is in use, either because of a power failure or the AC plug was pulled out.
   d. **Battery Low Alarm** means that the battery (models 622xx and 623xx) is running low and has 10 or fewer minutes of life remaining.

**Q. Communications (Model 622xx or 623xx)**

1. Connector RJ 45-socket in rear of case
2. Serial Interface—Bi-directional RS232 connection
3. Nurse Call Signal may be an option—see purchase options

**R. Printer**

1. Optional in Model 621xx and 622xx, Standard feature with Model 623xx.
2. The printer is located at the top center of the monitor, covered by a lid. The lid can be popped open by pushing the button located on the right side of the lid.
3. The printer is designed for thermal paper only. Paper roll is 2.25 inches by 100 ft. long. The coated side for thermal paper is markable by a fingernail scratch, the non-coated side is not. Thermal side should face towards the front of the monitor.
4. Loading the printer paper—No threading is involved to load the paper.
   a. Open the printer door by pressing on the button and lifting the lid.
   b. Place the roll into printer well with the thermal, coated side facing out.
   c. Pull enough of he paper out so that the strip will appear beyond the lid.
   d. Shut the lid to hold down the strip of paper.
5. If your model of the Atlas Monitor does not have the optional printer, the **Print** button

is labeled **Freeze**, and it freezes, or halts, the waveform display for 10 seconds to permit studying of the waveform, then the readout waveform resumes.

6. Push the **Print** button to print what is on the screen.
7. If the waveforms are displayed on the screen, the **Print** button prints 15 seconds of waveforms plus all current measurements.
8. If the Trend Data is displayed on the screen, the **Print** button prints all the trend data.
9. The printout captures data from 9 seconds before the **Print** button was pressed until 6 seconds after, for a total printout of 15 seconds.
10. If the Print on Alarm configuration is set to Yes, and a Patient Alarm or Measurement Invalid Alarm occurs, Atlas will print the current measurements and the currently configured waveforms automatically, alarm values noted by asterisks.
11. A Print on Alarm will not occur for low battery alarms of or instrument problem alarms.
12. If alarms are silenced or suspended, a Print on Alarm will not occur, but if alarm is still active when the silence period is over or when the alarm is unsuspended, a Print on Alarm will occur.

## S. Cleaning and Maintenance

1. The Atlas Monitor may be wiped clean with a slightly damp cloth and a mild detergent solution, or with an appropriately diluted, non-staining disinfectant solution.
2. Never immerse the monitor in any type of liquid.
3. BP Cuff and connections can be cleaned with damp cloth.
4. Fingerclip sensor is cleaned with isopropyl alcohol or sterilized with EtO cold cycle.
5. Temperature probes and covers should be handled as biohazard material and sterilized.
6. $ETCO_2$ watertrap should be replaced after 6 hours of use. The watertrap should be replaced in accordance with Hospital Infection Control policies for disposables. If the watertrap is full, an alarm will sound and a message reading " Replace $CO_2$ watertrap" will appear on the screen. The message "CO2 watertrap occluded" may also appear on the screen. If this happens, change the watertrap, which should be handled as a biohazard material.
7. $CO_2$ scrubber has an indefinite lifespan when used at the normal rate of one $CO_2$ reset every month and one $CO_2$ calibration every 6 months. The Scrubber can be disposed of as normal non-hazardous waste.
8. Service maintenance—Servicing of the monitor should be done at 6 month intervals by a qualified service technician to assure that the monitor is working correctly.