

## Welch Allyn 1500 Patient Monitor Train the Trainer


### A. Intended Use

Depending upon the configuration of your particular device, the Welch Allyn 1500 Patient Monitor can measure the following on Adult, Pediatric, and Neonate patients:

1. Standard features
  - a. Noninvasive blood pressure (NIBP)
  - b. Invasive blood pressure (IBP)
  - c. Heart rate
  - d. ECG (3-, 5-, or 12-lead)
  - e. Temperature
  - f. Respirations
  - g. SpO<sub>2</sub>
2. Options
  - a. etCO<sub>2</sub>
  - b. Printer
  - c. Central Station via Ethernet
  - d. Resting ECG with interpretation
  - e. Resting ECG with interpretation and measurements
  - f. Arrhythmia analysis
  - g. ST analysis




**Note:** The device is not suitable for transport.








**Note:** The arrhythmia module and ST analysis are not intended for use with Neonate patients.

**Note:** Portable communication equipment, HF two-way radios and devices marked with the  symbol can affect this monitor.

### B. Function Buttons

The function button panel is located on the right/front side of the device. Pressing the following buttons will produce the following actions.

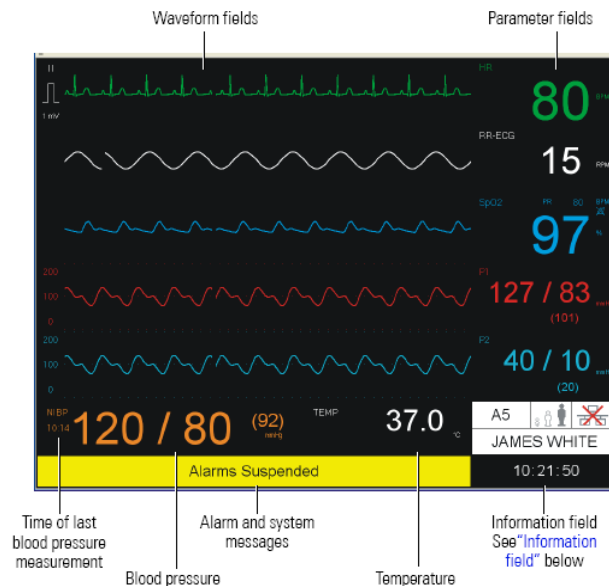
1.  Print: Printout of three waveforms and all parameters. The waveforms and print settings are defined in the recorder menu. Note that an auto-printout can also be obtained when a limit is violated. This is also defined in system setup.
2.  Alarm silence: Silence icon of an audible alarm or confirmation of displayed messages. The silence icon time is defined in the Setup/Administrator menu.
3.  NIBP measurement interval: Interval setup for noninvasive blood pressure measurement or switch-off of the interval measurement.

4.  NIBP measurement: Start or stop of the noninvasive blood pressure measurement.
5.  Standby: In standby mode patient monitoring is interrupted and the screen is blank. Monitoring is resumed when any button is pressed.  
**Note:** When the monitor is connected to Acuity, different options are given.
6.  Setup: Display of the Setup menu. The required menu item can be selected by turning the trim knob and pressing it.
7.  Trend: Displays trend data and options.
8.  Home: Pressing this button closes opened dialogues and returns to the monitoring screen. Any settings that were changed in the opened dialogue screen are saved. Pressing this button is the same as selecting OK on the opened dialogue screen.
9.  ON/OFF: Press to switch the monitor on. Press and hold for four seconds to switch the monitor off. The LEDs below this button indicate: Left LED—AC power is connected to the monitor. Right LED—AC connected to the monitor and internal battery being charged.
10.  Trim knob: The trim knob is used for navigation, value selection and value change. Use as follows:
  - a. Turn the trim knob to the left or right to select a field or value. A white frame appears around the field.
  - b. Press the trim knob to open the menu of the selected parameter field or value.
  - c. Turn the trim knob to the left or right to select the desired value.
  - d. Press the trim knob to apply the changed value.






### C. Display Overview

1. The main screen will be divided into three sections.
  - a. Waveform fields
  - b. Parameters fields
  - c. Information fields

## 2. Main Screen View




## 3. Information Field

- a. Top line: The left box displays the patient's room number (entered in the patient data screen). If the monitor is connected to the Acuity, the room number is taken from Acuity. The middle box displays the patient mode (Neonatal, Pediatric, or Adult) indicated by the highlighted icon (    ). The right box indicates the monitor's network connection:
  - i.  Connected to Acuity.
  - ii.  Acuity enabled but no connection.

**Note:** When the Acuity option is not installed, this box remains blank.
- b. Middle line: Displays the patient name. If the monitor is connected to the Acuity, the patient name is taken from Acuity.
- c. Bottom line: Displays the current time. When power is not connected a battery symbol is also displayed to the left of the time.


## D. Connect and Power Up

1. Connect AC power to the rear of the monitor.
2. Press the **On/Off** button  (confirmed by a beep).
3. Confirm the **New Patient** dialogue with Yes or No.
  - a. Yes: Previous patient data is deleted. The patient data can be entered via the setup menu (Setup > Patient data).
  - b. No: Previous patient data, if any, is used.
4. Check the settings.

### E. Power Down

1. To turn the monitor off, press the **On/Off** button for approximately four seconds. A “Monitoring is shutting down, Please Wait” message will appear.

### F. Change Patient Mode

1. Press the Setup Button. 
2. Using the trim knob, scroll to Patient Mode.
3. Press knob and highlight Adult (13 years and older), Pediatric (Between 29 days and 12 years), or Neonate (Birth through 28 days).


### G. Battery

1. Two batteries are available for the monitor (Lithium-ion is default battery in U.S. and Canada):
  - a. Lithium-Ion battery: This type of battery will provide power for approximately two hours when fully charged.
  - b. Lead acid battery: This type of battery will provide power for approximately one hour when fully charged.
2. When running on battery power the battery symbol is displayed next to the time. The battery indicator gives an approximate guide to the capacity of the battery:



- Full = between 87.5% and 100% capacity.
  - 3/4 full = between 62.5% and 87.5% capacity.
  - Half full = between 37.5% and 62.5% capacity.
  - 1/4 full = between 12.5% and 37.5% capacity.
  - Empty = between 0% and 12.5% capacity.
3. When the battery capacity is close to depletion:
    - a. The alarm message **Battery low** appears.
    - b. The battery symbol flashes.
    - c. An audible alarm beep is heard.
    - d. The visual alarm indicator flashes blue.
    - e. After a few minutes if the monitor is not connected to AC power, the message **Battery nearly depleted** is displayed and a continuous beep is heard; the monitor switches off.
    - f. If power is connected during this period, the monitor remains on.
  4. Battery charge time for total discharged batteries
    - a. Lead acid battery: 80% capacity—2.8 hours, 100% capacity—3.5 hours
    - b. Li-Ion battery: 80% capacity—2.5 hours, 100% capacity—6.5 hours

### H. Display Waveforms

1. Press the **Setup** button. 
2. Select **Waveforms**.
3. The waveforms 1 through 6 are configured through the pull-down menus.
4. Set the amplitude for each waveform according to preference and signal strength. Set the sweep speed (for all waveforms) according to preference and patient.
5. Select OK to save.


**Note:** The RESP and CO<sub>2</sub> sweep speed values are not configurable.

## I. Alarms


1. There are three alarm priorities (Low, Medium, and High).
2. Alarm Priority and Visual/Audible Indicators

Alarm type	Priority	LED visual alarm indicator	Audible signal	Display
Technical	Low	Blue	Single deep tone every 2 seconds	Text display in the alarm status field at the bottom.
Parameter	Medium	Yellow (flashes with parameter field)	Two tone high/low every second.	Text display in the alarm status field at the bottom. Yellow flashing parameter field.
Parameter	High	Red (flashes with parameter field)	Three high tones every second.	Text display in the alarm status field at the bottom. Red flashing parameter field.
Lethal	High	Red (flashes with parameter field)	Three high tones every second.	Text display in the alarm status field at the bottom. Red flashing parameter field.

3. Silencing an alarm
  - a. Alarm Limit


- i. Press the Alarm Silence button .
- ii. The audible alarm is silenced for 1, 1.5 or 2 minutes.
- iii. The visual parameter alarm continues to be displayed.
- iv. After the defined silence time, the audible alarm is reactivated. The silence time is defined in **Setup > Setup Administrator > Alarms > Alarm Silence Time.**

- b. Technical Alarm


- i. A technical alarm can be acknowledged by pressing the **Alarm Silence** button . This alarm is not reactivated.

- c. Suspend all alarms

- i. The Alarm Suspend is used to deactivate all alarms caused by, for example, disconnecting patient cables, loose electrodes or relocation of the patient. The alarm is suspended for a duration of 1, 1.5, or 2 minutes. During this time the message **Alarms Suspended** is displayed. The alarm suspension time is defined in **Setup > Administrator > Alarms > Alarm Suspend Time.**

- ii. Press the **Setup** button .
- iii. Select **Alarm Suspend**.
- iv. A message is given in the message bar indicating that the alarms have been suspended. If you wish to reactivate the alarms before the set duration, press the **Setup** button again. The menu entry is changed to **Alarm Resume**. Select this option to reactivate.

- d. Turning off individual parameter alarms

- i. Individual alarms can be inhibited via the **Alarms** menu (see below) and in any parameter measurement field by using the trim knob to select a parameter (a white frame appears around the selected field) and pressing the trim knob to display the menu for that parameter.
    - ii. Switch off individual limits by selecting the limit setting and rotating the trim knob to the maximum limit until off is selected.
    - iii. The alarm off symbol is displayed in the respective measurement field.
  - e. Alarm Limit Settings
    - i. Press the Setup button .
    - ii. Select the menu item **Alarms**.
    - iii. Use the trim knob to scroll through the alarm settings and select the limits, then press OK.

**Note:** All alarm limits are reset to the default system settings after confirming a new patient, if they have not been stored as user defaults.

**Note:** The alarm settings for arrhythmia are detailed in the Arrhythmia menu option in the setup menu.

## J. Monitoring

1. Connect the ECG electrodes, the NIBP cuff, the SpO<sub>2</sub> sensor, the CO<sub>2</sub> sensor and the Temperature sensor to the patient as required.
  - a. As soon as the sensors are connected the corresponding indication appears on the display.
2. Check or set the alarm limits.

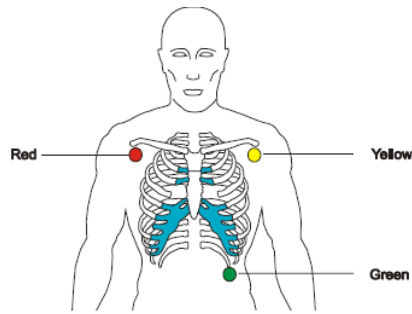
**Note:** Values are only displayed when the ECG cable or at least one sensor is connected. If a sensor is disconnected, a technical alarm is issued. The measured value will no longer be displayed if the sensor is disconnected and the alarm is acknowledged.

## K. ECG

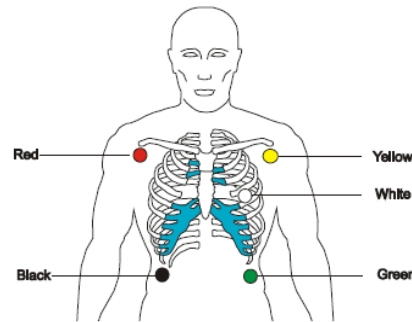
1. The quality of the ECG trace is dependent on the degree of contact resistance between the electrode and the skin. To ensure the lowest resistance, the following points must be observed:
  - a. Shave the areas where the electrodes are to be placed.
  - b. Use alcohol to thoroughly clean the areas where the electrodes are to be placed.
  - c. When applying the electrodes, make sure that there is a layer of gel between the electrode and the skin.

**Note:** To maintain the quality of signals during long-term monitoring, the electrodes should be replaced at least every 48 hours. Over longer periods, the electrode gel may dry out and the patient's skin can be irritated by the gel or adhesive. When replacing electrodes, do not position the new electrodes on exactly the same locations but a little to the side of the original positions.

2. Connecting the ECG patient cable
  - a. Color code: the colors shown here are according to IEC requirements. The AHA color configuration is shown below.

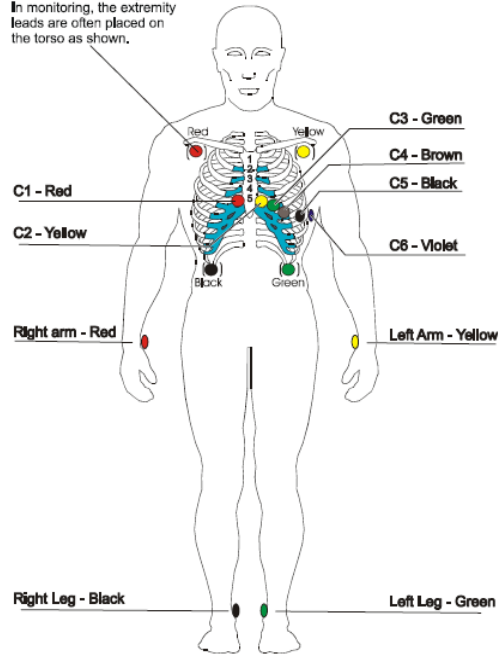


b. 3-Lead



c. 5-Lead

**Note**  
The electrode placement shown here is based on diagnostic ECG. In monitoring, the extremity leads are often placed on the torso as shown.



d. 12-Lead

e. AHA color configuration (below)

Electrode identification and color code IEC/AHA

The electrode placements shown in this manual are labelled with the colors according to IEC requirements. The equivalent AHA colors are given below.

System	IEC (Europe)		AHA (U.S.)	
	Electrode identifier	Color	Electrode identifier	Color
Limb	R	Red	RA (right arm)	White
	L	Yellow	LA (left arm)	Black
	F	Green	LL (left leg)	Red
Chest	C1	White/Red	V1	Brown/Red
	C2	White/Yellow	V2	Brown/Yellow
	C3	White/Green	V3	Brown/Green
	C4	White/Brown	V4	Brown/Blue
	C5	White/Black	V5	Brown/Orange
	C6	White/Violet	V6	Brown/Violet
Neutral	N	Black	RL (right leg)	Green

**Note:** When an electrode falls off or the resistance of an electrode is too high, a Lead Off indication is displayed and an audible alarm is issued.


**Note:** Danger of destroying the monitor during defibrillation! The monitor is type CF protected only when the original Welch Allyn patient cables are used.

3. Pacemaker


- a. Activate the pacemaker display.
  - i. Select the HR measurement field using the trim knob. A white frame appears around the measurement field.
  - ii. Press the trim knob to display the menu.
  - iii. Scroll down to the pacer display option and select Yes.

**Note:** Pacemaker spikes are presented as vertical lines on the ECG trace. These vertical lines represent neither magnitude nor duration of the pacemaker pulse but are purely time relative.

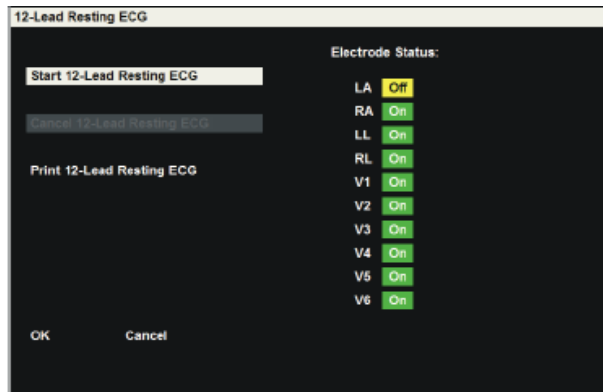
4. ECG Display

- a. A maximum of six leads can be displayed on the monitor. ECG 1, 2 and 3 are the ECG waveforms set up in the Waveform Display menu.
  - i. Press the **Setup** button .
  - ii. Select **Waveforms**.

5. 12-Lead Resting ECG Option

- a. With this option it is possible to record a 12-lead resting ECG. One resting ECG can be stored at a time. The resting ECG cannot be viewed on the monitor but can be exported to Acuity and can be printed on the internal printer at any time.
- b. Taking a resting ECG
  - i. Press the **Setup** button .


- ii. Select **12-lead ECG**. The following screen will display:



- iii. Check electrode status. Ensure the green On is displayed for all electrodes—this indicates that the electrode resistance is within the acceptable range to obtain a valid reading.
  - iv. Select **Start 12-lead Resting ECG**. The message **Rest ECG Analysis - in Progress** is displayed while the resting ECG is being taken. This is followed by **Rest ECG - Complete**.
  - v. The resting ECG remains in memory until a new patient is defined or the ECG is overwritten with a new recording.
6. Changing ECG Menu Settings
    - a. Select the HR measurement field using the trim knob. A white frame appears around the measurement field.
    - b. Press the trim knob to display the menu.
    - c. Scroll down to the desired parameter and press the trim knob to make changes.
  7. Arrhythmia Settings
 


**Note:** The arrhythmia menu entry is only displayed when the full arrhythmia option is enabled.

**Note:** Lethal arrhythmia (LTAs) detection comes standard on all monitors.


    - a. Press the Setup button 
    - b. Select Arrhythmia.
    - c. The Arrhythmia Screen displays. Turn the trim knob to highlight desired option and press the trim knob. Rotate the knob to make changes and then press the knob. Then press OK.



d. ST Analysis

- i. On-board ST analysis is available.
- ii. To enable ST analysis:
  - (a) Press the Setup button .
  - (b) Use the trim knob to highlight and select Parameters.
  - (c) Use the trim knob to highlight and select "Yes."
  - (d) Use the trim knob to highlight and select OK.

L. Respiration Rate

1. The RR measurement field is not displayed if the etCO<sub>2</sub> field is active. If the RR should be measured via the ECG instead of etCO<sub>2</sub>, the etCO<sub>2</sub> measurement field must be deactivated as follows:
  - a. Press the Setup button .
  - b. Select Parameters.
  - c. Deactivate etCO<sub>2</sub> by selecting (No).
- Note:** The RR signal is measured via the R (RA) and F (LL) electrodes of the ECG cable (impedance measurement). After the patient is connected, about 30 seconds can elapse before a reliable value is displayed.
2. Changing Respiration Rate Settings
  - a. Select the RR measurement field using the trim knob. A white frame appears around the measurement field.
  - b. Press the trim knob to display the menu.
  - c. Scroll down to the desired parameter and press the trim knob to make changes.


M. etCO<sub>2</sub> Measurement


1. If the etCO<sub>2</sub> measurement field is not displayed it means that it is not enabled in the parameter settings.
2. To enable etCO<sub>2</sub>:
  - a. Press the Setup button.
  - b. Enter the menu **Setup/Parameters**.
  - c. Activate etCO<sub>2</sub> by selecting (Yes).

**Note:** The Oridion sensor is the only approved sensor for etCO<sub>2</sub> monitoring.

3. Preparing the Oridion sensor
  - a. During nebulization or suction for intubated patients, in order to avoid moisture buildup and sampling line occlusion, remove the sampling line luer connector from the monitor.
  - b. Replace the sampling line according to hospital protocol or when a blockage is indicated by the monitor.
  - c. When connecting a sampling line to the monitor, screw the sampling line connector clockwise into the monitor CO<sub>2</sub> port until it can no longer be turned, to ensure that it is connected securely to the monitor. This will ensure that there is no leak of gases during measurement at the connection point and that measurement accuracy is not compromised.
  - d. When the Caution message **Blockage!** appears on the screen indicating that the filter line which is attached to the handheld monitor is blocked, the monitor's CO<sub>2</sub> pump will stop pumping the patient's breath into the monitor for testing.
    - i. Disconnect and reconnect the filter line.
    - ii. If the message still appears, disconnect and replace the filter line. Once a working filter line is attached to the handheld monitor, the pump will automatically resume operation.
4. Changing etCO<sub>2</sub> Settings
  - a. Select the RR measurement field using the trim knob. A white frame appears around the measurement field.
  - b. Press the trim knob to display the menu.
  - c. Scroll down to the desired parameter and press the trim knob to make changes.

## N. NIBP

1. Select the appropriate size cuff.
  - a. Measure the circumference of the patient's bare upper arm, midway between the elbow and shoulder.
  - b. Wrap the cuff around the patient's limb and verify that the artery index marker lies somewhere between the two range markings on the cuff.
  - c. Choose the appropriate cuff size based on the circumference measurement of the patient's arm. Ensure that the Artery Index Marker arrow falls in between the cuff range markers that are depicted in "cm." If the circumference of the patient's limb falls between two cuff sizes, use the larger cuff size.
2. Attach the cuff.
  - a. Position the cuff on the patient's bare upper arm midway between the shoulder and the elbow.
  - b. Wrap the cuff snugly so that there is room for no more than two fingers between the cuff and the patient's bare upper arm.
  - c. Position the Artery Index Marker on the cuff directly over the brachial artery.
  - d. Ensure that the blood pressure tubing has no kinks or twists.
3. Start a single NIBP.
  - a. Press the **NIBP start/stop** button  .

- b. The measurement can be stopped at any time by pressing the button again.
  4. Automatic Blood Pressure Measurement
    - a. Press the **NIBP measurement interval** button .
    - b. Select an interval between three minutes and 60 minutes, and confirm your selection with **OK**.
    - c. The message **NIBP interval – xx minutes** is displayed.
    - d. The first measurement is started after the interval is selected, or it can immediately be initiated by pressing the **NIBP start/stop** button.
- Note:** After exiting the standby mode, ensure that the NIBP intervals are re-armed by manually starting an NIBP measurement.

**Note:** These settings are reset when the monitor is switched off and automatic measurement must again be defined when the monitor is switched on.
5. Changing NIBP Settings
  - a. Select the NIBP measurement field using the trim knob. A white frame appears around the measurement field.
  - b. Press the trim knob to display the menu.
  - c. Scroll down to the desired parameter and press the trim knob to make changes.
6. The monitor sets the maximum pressure as follows:
  - a. Adults: 270 mmHg
  - b. Pediatric: 180 mmHg
  - c. Neonate: 150 mmHg

## O. SpO<sub>2</sub> Monitoring

1. Pulse oximetry enables the continuous noninvasive monitoring of the functional oxygen saturation of the arterial hemoglobin and the peripheral pulse rate.
  2. The display shows the continuous progress of the numeric SpO<sub>2</sub>, pulse rate, plethysmographic waveform and signal quality values.
  3. The displayed plethysmographic waveform is not proportional to the pulse volume.
  4. The update period of the measurement readings on the display is approximately two seconds.
  5. According to the relevant standards, the temporary alarm silence period can be set to a maximum of two minutes.
- Note:** Only use sensors recommended for Welch Allyn for SpO<sub>2</sub> measurement with the monitor. Other oxygen transducers (sensors) can impact the performance and give incorrect measurement readings.
- Note:** Change the sensor's position at least every four hours.
6. Changing SpO<sub>2</sub> Settings
    - a. Select the SpO<sub>2</sub> measurement field using the trim knob. A white frame appears around the measurement field.
    - b. Press the trim knob to display the menu.
    - c. Scroll down to the desired parameter and press the trim knob to make changes.

## P. IBP Monitoring

1. Changing IBP Settings
  - a. Select the P1 or P2 measurement field using the trim knob. A white frame appears around the measurement field.
  - b. Press the trim knob to display the menu.
  - c. Scroll down to the desired parameter and press the trim knob to make changes.
2. IBP Zero Set
  - a. Zero Set must be carried out before every application.
  - b. To prevent incorrect measurement readings due to the sensor's physical null drift, calibrate the sensor every 24 hours.
  - c. Move to the desired IBP measurement field (P1, P2) using the trim knob.
  - d. Press the trim knob to display the IBP menu.
  - e. Select Zero Set with the trim knob and press to carry out the zeroing.
  - f. The message P1 Zeroing appears followed briefly by P1 Zero OK.

**Note:** Carefully read the manufacturer's instructions before using the invasive blood pressure kit.

**Note:** When applying the kit to the patient, make sure that absolutely no air penetrates the system.

**Note:** The kit and operating procedure vary according to manufacturer. Please consult the manufacturer's documentation for connection.

**Note:** P1 is the only connection that can determine the HR/PR source.

## Q. Temperature Monitoring

1. Depending on the sensor type, the sensor can be applied to the ear, the skin or the rectum.
2. To achieve a reliable measured value, independent of the measuring site, the measurement duration must be at least two minutes.
3. To change temperature settings:
  - a. Select the Temperature measurement field using the trim knob. A white frame appears around the measurement field.
  - b. Press the trim knob to display the menu.
  - c. Scroll down to the desired parameter and press the trim knob to make changes.

## R. Acuity Central Monitoring (if applicable)

1. The Acuity® Central Station provides central patient monitoring for monitoring devices connected to the network. The monitor communicates through a hardwired Acuity connection.
2. While connected to the network, the monitor sends patient data to Acuity. Acuity continuously analyzes the data and provides appropriate alarm or alert messages at the Central Station and other network devices such as a hallway message panel or the monitor itself. Acuity also stores the patient data for viewing or report printing.
3. If the monitor loses communication with Acuity, it continues to monitor the patient and display patient data, as well as generating local patient alarms or alert messages.



When connection is restored it automatically reconnects to Acuity and uploads trend information.

4. Connect to Acuity through the Ethernet connector positioned on the back of the monitor.

**Note:** Acuity connectivity is a licensable feature.

**Note:** When the monitor is not connected to the network there are no patient alarms or alerts at the Acuity Central Station.


## S. Printer (if applicable)

1. Press the Print button .
2. Printout of three waveforms and all parameters. The waveforms and print settings are defined in the Recorder menu. Note that an auto-printout can also be obtained when a limit is violated. This is also defined in system setup.
3. To change printer option:
  - a. Press the Setup button .
  - b. Use the trim knob to highlight **recorder** and push knob.
  - c. Use the trim knob to make changes to the waveform, recording time, and recording delay.
  - d. Highlight and select OK.

**Note:** The monitor is delivered without printing paper installed. Only use original Welch Allyn printing paper. The thermal paper is sensitive to heat, humidity, and chemical vapors. Store the paper in a cool, dry and chemical-free area.

4. To change printer paper:
  - a. Pull the locking catch to the front. The paper tray is unlocked.
  - b. Pull the paper tray out.
  - c. Insert paper and pull the beginning of the paper out. Make sure that the paper mark is facing to the top.
  - d. Reinsert and close the tray. Be sure that the paper lies exactly between the rails.

## T. Standby Mode


1. This mode is selected to temporarily interrupt the monitoring of the patient until ready to resume. All patient data is saved.
  - a. When the **Standby** button  is pressed, a black screen with "Standby Mode Press any key to resume monitoring" is displayed:
2. In standby mode, vital signs data and alarms are no longer displayed or collected.
3. When monitoring is resumed, you are prompted to confirm the same patient. If "no" is selected, patient data is deleted.

**Note:** If a patient has not been confirmed, all patient data is lost when standby mode is entered.

**Note:** When the monitor is connected to Acuity, different options are given.

**Note:** After exiting standby mode, ensure that the NIBP intervals are re-armed by manually starting an NIBP measurement.

## U. Trends

1. The measured values are entered in the set intervals and additionally after every manual NIBP measurement. The monitor can store 24 hours of trends at one-minute intervals.
  - a. Trend data is deleted when a new patient is entered.
  - b. When the memory is full, the oldest trend data is overwritten.
  - c. The display interval for the table can be selected using the **Trend** button.
    - i. 1-minute, 5-minute, 15-minute, 1-hour, and 4-hour intervals can be selected.
2. Displaying trend data
  - a. Press the **Trend** button .
  - b. Previous measurements are displayed using the up/down icons.
  - c. Use the trim knob to select the trend display interval with the pull-down menu in the **Interval** setting.
  - d. The **Clear** option deletes all trend data.
  - e. The **Print** option prints all displayed trend data.

## V. Cleaning

1. Before cleaning, switch the monitor off and disconnect it from AC power by removing the plug.
2. Do not use high-temperature sterilization processes (such as autoclaving). Do not use E-beam or gamma radiation sterilization.
3. Do not use solvents or abrasive cleaners on either the monitor or cable assemblies.
4. Do not immerse the monitor or cable assemblies in liquid.
5. Thoroughly inspect.
  - a. Look for any signs of damage and any improper mechanical function of buttons or connectors.
  - b. Gently bend and flex cables, inspecting them for damage or extreme wear, exposed wires, or bent connectors.
  - c. Confirm that all connectors engage securely.
  - d. Ensure all transducers and accessories are within their expiratory date.
  - e. Immediately report any sign of damage or malfunction to your service department.
6. To clean the monitor or any accessories, follow these steps:
  - a. Wipe the equipment with a cloth slightly moistened (not wet) with one of the approved cleaning solutions listed below.

Equipment	Cleaning instructions	Approved cleaning solutions
Monitor <sup>1</sup>	Wipe with a nearly dry cloth moistened with cleaning solution. Thoroughly wipe off any excess cleaning solution. Do not let cleaning solution run into connector openings or crevices. <sup>2</sup>	70 % solution isopropyl alcohol; neutral mild detergent solution; all products designed for cleaning plastic.
ECG cable, extension cable	Consult manufacturer's instructions.	Mild detergent solution; also consult manufacturer's instructions.
SpO <sub>2</sub> cable, extension cable	Consult manufacturer's instructions.	Consult manufacturer's instructions.
Other accessories	Consult manufacturer's instructions.	Consult manufacturer's instructions.

1. The equipment can be disinfected to comply with OSHA requirements for cleaning and decontaminating spills of blood and other body fluids. (Federal OSHA blood borne pathogens standard: 29 CFR 1910.1030, 12/6/91.)

2. If liquid gets into the connectors, dry the area with warm air and then verify all monitoring functions.

- b. Thoroughly wipe off any excess cleaning solution. Do not let the cleaning solution run into or accumulate in connector openings, latches, or crevices. If liquid gets into connectors, dry the area with warm air, and then check the equipment to confirm that it operates properly.

**Note:** Never use any of the following solutions or similar products to clean the equipment: ethyl alcohol, ethanol, acetone, hexane, abrasive or scouring powder or material, or any cleaning material that damages plastic.