

Addendum

Addendum to the Instructions for Use

This addendum provides additional information for the IntelliVue MX400-MX800 and the MX750/MX850 Rel. P.0x Patient Monitor Instructions for Use.

Please store it with your monitor documentation.

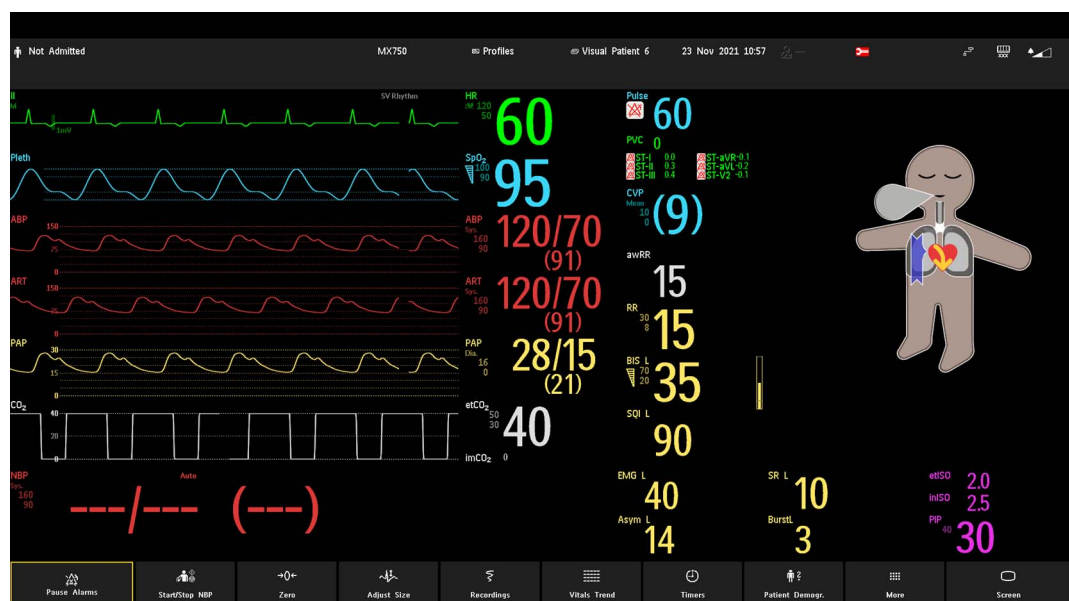
Visual Patient Avatar

**MX400-550
and MX750/
MX850 only**

The Visual Patient Avatar is an animated virtual model of a monitored patient, which provides visual representations of vital signs through color, shape, and animation, based on the patient's condition. The avatar provides an overview of a patient's health state at a glance.

The Visual Patient Avatar has its own set of parameter thresholds for individual parameters. The visualizations of the vital signs depend on the configuration of this parameter set. If the measured values exceed or fall below a threshold, the animation represents this transition accordingly.

To view the Visual Patient Avatar, select the preconfigured screen from the monitor's screen list. The Visual Patient Avatar is an embedded screen element and is always displayed as long as this screen is selected.



Visual Patient Avatar on an IntelliVue MX750 Patient Monitor

NOTE

- Changes in the visualization of the Visual Patient Avatar are only defined by the thresholds set for the individual parameters in the avatar. They are not defined by the alarm limits for these parameters.
- Animation changes in the Visual Patient Avatar do not necessarily correlate with the pace of changes in measurement values. Only the thresholds define how and when the animation changes.



Setting Up the Visual Patient Avatar

To enter the Visual Patient setup menu, select the Visual Patient Avatar or select **Main Setup** and then **Visual Patient**.

To change the orientation of the Visual Patient Avatar on the screen, select **Orientation** and choose the orientation that best suits your needs. Choices are **Upright**, **Inclined**, and **Upside Down**.

The Visual Patient Avatar provides visualizations for the following parameters:

- Heart rate
- Pulse rate
- ST elevation, when STE analysis is enabled
- Mean blood pressure
- Central venous pressure
- SpO₂
- Respiration rate
- End-tidal CO₂
- Body temperature
- Cardiac output
- Brain activity when a BIS or Masimo SedLine measurement is connected, using the BIS or PSI value
- Relaxation status for TOF ratio, when the NMT measurement is connected
- FiO₂, Airway pressure and the tidal volume, if your monitor is connected to an anesthesia machine or a ventilator

NOTE

The Visual Patient setup menu only shows the parameters for measurements currently available on the monitor.

Setting Up the Individual Parameters

Select a parameter to open the respective setup menu for the Visual Patient Avatar. Thresholds are set in configuration mode. In monitoring mode, you can only view the current thresholds and units. The source can be set in monitoring mode. If the preconfigured thresholds are not suitable for your patient, you can switch the visualization for the respective parameter off.

Upper Threshold: Any value higher than this threshold triggers the related change of the Visual Patient Avatar.

Lower Threshold: Any value lower than this threshold triggers the related change of the Visual Patient Avatar.

Source: Determines from which label the measurement value is derived.

"Any" labels are available for **Pulse Rate**, **Arterial Press.**, **SpO₂**, **Respiration Rate**, **Body Temperature**, **Cardiac Output**, and **Brain Activity**. If an "Any" label is set as source, the appropriate label is selected according to priority. Otherwise, you can select a dedicated label. If a measurement can only be derived from one single label, **Source** is grayed out and cannot be changed.

Unit: Determines which unit is active for the current parameter and changes the scale for the threshold value settings accordingly.

Visualization: Select **On** or **Off** to switch the visualization for a selected parameter on or off. If the visualization for an individual parameter is switched off, the Visual Patient Avatar will not show the respective parameter.

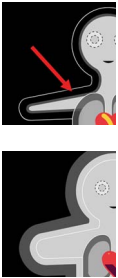
NOTE

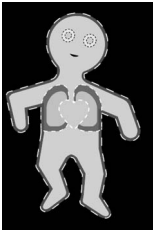
- **ST Analysis:** The thresholds for the ST Analysis parameter are identical with the preconfigured STE alarm limits. If you select **ST Elevation**, a menu opens where ST Elevation and ST Elevation Alarms can be set to **On** or **Off**.

Visualizations

The following table shows the states of the individual parameters and examples for their visualizations in the Visual Patient Avatar:

Parameter	Visualization Description	Visualization Example in Avatar
Heart Rate	If a heart rate is available, the heart is colored red, and the yellow arrow inside the heart moves downward. The moving arrow indicates the electrical impulse traveling through the heart's electrical conduction system. The pace of the arrow depends on the patient's state: • If the heart rate is within the thresholds, the arrow moves at a moderate pace. • If the heart rate falls below the configured lower threshold, the arrow moves at a very slow pace. • If the heart rate exceeds the configured upper threshold, the arrow moves at a very fast pace.	
Pulse Rate	If a pulse rate is available, the avatar's body pulsates. The frequency changes to very high or very low once the respective thresholds are crossed. • If the pulse rate is within the configured thresholds, the body pulsates at a moderate pace. • If the pulse rate falls below the configured lower threshold, the body pulsates at a very slow pace. • If the pulse rate exceeds the configured upper threshold, the body pulsates at a very fast pace.	
ST Analysis	A small dark shape, indicating the hypoxic myocardium, is displayed within the heart, depending on the location of an ST segment deviation: • Anterior: a small shape is displayed on the left side of the avatar's heart (from the point of view of the patient). • Posterior: a small shape is displayed on the right side of the avatar's heart (from the point of view of the patient - displayed in the example to the right). • Inferior: a small shape is displayed as horizontal stripe in the lower part of the avatar's heart. • Multiple: all shapes are displayed as one and cover half of the avatar heart, if at least two of all regions are affected.	

Parameter	Visualization Description	Visualization Example in Avatar
Arterial Pressure	If an arterial pressure is available, the outline of the avatar expands up to a certain point, depending on the patient's state. - If the arterial pressure is within the configured thresholds, the outline of the avatar expands to the body boundary. - If the arterial pressure falls below the configured lower threshold, the outline does not expand all the way to the body boundary. - If the arterial pressure exceeds the configured upper threshold, the outline of the avatar expands beyond the body boundary. Note: If NBP is selected as arterial pressure source, and an NBP measurement numeric is aged, the Visual Patient Avatar switches the arterial pressure visualization to the "unavailable" status, and the outline of the avatar's body is displayed as a dotted line after the configured aging time.	
Central Venous Pressure	If central venous pressure is available, a vein, indicating the vena cava, is displayed next to the heart. - If the central venous pressure is within the configured thresholds, the vein is fully filled. - If the central venous pressure falls below the configured lower threshold, the vein is partially filled. - If the central venous pressure exceeds the configured upper threshold, the vein is filled beyond its boundaries.	
Oxygen Saturation	If an oxygen saturation value is available, it is represented by the color of the avatar. - If the oxygen saturation is within the configured thresholds, the color of the avatar is light brown. - If the oxygen saturation falls below the configured lower threshold, the color of the avatar changes to violet. - If the oxygen saturation exceeds the configured upper threshold, the color of the avatar changes to light blue.	
Respiration Rate	If a respiration rate is available, the lungs, and, if available, an air bubble, are displayed with a breathing animation. - If the respiration rate is within the configured thresholds, the avatar's breathing is animated with a moderate frequency. - If the respiration rate falls below the configured lower threshold, the avatar's breathing is animated with a low frequency. - If the respiration rate exceeds the configured upper threshold, the avatar's breathing is animated with a high frequency.	
End-tidal CO ₂	If end-tidal CO₂ is available, it is visualized with an air bubble coming out of the avatar's mouth. The air bubble is animated with the frequency of the respiration rate. - If the end-tidal CO₂ value is within the configured thresholds, the air bubble is filled completely. - If the end-tidal CO₂ value falls below the configured lower threshold, the air bubble is not completely filled. - If the end-tidal CO₂ value exceeds the configured upper threshold, the air bubble is filled beyond its outline.	

Parameter	Visualization Description	Visualization Example in Avatar
Body Temperature	If a body temperature is available, symbols next to the avatar show when the thresholds are crossed. - If the body temperature is within the configured thresholds, no symbols are displayed next to the avatar. - If the body temperature falls below the configured lower threshold, snowflakes are displayed next to the avatar. - If the body temperature exceeds the configured upper threshold, heat waves are displayed next to the avatar.	 
Cardiac Output	If cardiac output is available, an aorta is shown coming out of the heart. The aorta is shown with red dots, indicating red blood cells that are ejected into the aorta, according to the patient's cardiac output. - If the cardiac output is within the configured thresholds, the aorta is filled completely and contains a moderate number of red dots. - If the cardiac output falls below the configured lower threshold, the aorta is not filled completely and contains very few red dots. - If the cardiac output exceeds the configured upper threshold, the aorta is filled beyond its boundaries and contains a very high number of red dots.	
Brain Activity	If a BIS or PSI value is available, the avatar's eyes visualize the brain activity. - If the brain activity is below the configured upper threshold, the eyes of the avatar are closed. - If the brain activity exceeds the configured upper threshold, the eyes of the avatar are open.	 
Relaxation	If a TOF ratio value is available, the level of relaxation is represented by the posture of the avatar. - If the relaxation level is within the thresholds, the avatar is displayed with thumbs up. - If the relaxation level falls below the configured lower threshold, the limbs of the avatar are displayed as hanging. Note: The relaxation status is only displayed if a TOF ratio value is available. If you switch from TOF ratio to TOF count or any other NMT stimulation mode, the relaxation status will no longer be displayed on the avatar.	 
FiO ₂	If FiO₂ is available, the color of the lungs and trachea change according to the state of the patient. - If the value is within the configured thresholds, the lungs and the trachea are colored red. - If the value falls below the configured lower threshold, the lungs and the trachea are colored pink. - If the value exceeds the configured upper threshold, the lungs and the trachea are colored blue.	

Parameter	Visualization Description	Visualization Example in Avatar
Airway Pressure	If airway pressure is available, the trachea of the avatar shows a filling. Depending on the state of the patient, this filling expands or shrinks. The filling is animated with the frequency of the respiration rate. • If the airway pressure is within the configured thresholds, the throat is filled to its boundaries. • If the airway pressure falls below the configured lower threshold, the filling of the throat does not go all the way to its boundaries. • If the airway pressure exceeds the configured upper threshold, the throat is filled over its boundaries.	
Tidal Volume	If tidal volume is available, the lungs are filled by an animation. This filling expands or shrinks, depending on the patient's state. • If the tidal volume is within the configured thresholds, the lungs are filled up to their outlines. • If the tidal volume falls below the configured lower threshold, the animation does not fully fill the lungs. • If the tidal volume exceeds the configured upper threshold, the lungs are filled further than the outline.	

If a parameter is unavailable, the avatar will display the "unavailable" status for this parameter. This can be indicated by gray color, dotted lines, or no representation at all.



Visual Patient Avatar with all parameters in "unavailable" status

WARNING

- Unavailability of a parameter value can have multiple reasons including, for example, an aged aperiodic measurement numeric or a measurement in a technical alarm condition. If the Visual Patient Avatar unexpectedly does not show a visual representation of a connected measurement, always check the setup of the individual measurement.
- The Visual Patient Avatar is not a replacement for alarms.