

# NENASim Infant Xtreme



**MEDICAL·X**  
ADVANCING SIMULATION

## NENASim Infant Xtreme

**NENASim Infant Xtreme** is the world's most realistic high-fidelity neonatal simulator!

Faithful reproduction of a baby's anatomy and physiology, **NENASim Infant Xtreme** has distinctive and unique human characteristics, offering a fully immersive simulation experience.

Carefully designed to prepare learners for real-world events, **NENASim Infant Xtreme** is an effective tool for all kinds of neonatal care specialist training as advanced life support, intensive care, several medical procedures, and simulation of countless clinical cases.





## Design philosophy: realism in form and function

Realism is key in our design philosophy.

The delicate structure of an infant is accurately experienced through the realistic looks and feel of the simulator.

Made with our unique soft silicone, **NENASim Infant Xtreme** has soft and smooth skin, mimicking the feeling of touching a real baby.

◆ Length: 59 cm

◆ Weight: 4.2 kg

◆ Sex: Male

◆ Skin tone:



Dark



Medium



Light



## **General**

### **Realistic look and feel**

From the lifelike eyes and palpable fontanelles to the soft silicone skin, NENASim Xtreme looks, feels, weighs, and sounds like a real baby.

### **Tetherless and Wireless**

With internal electrical power, NENASim Infant Xtreme is fully operational on battery power for up to 6 hours.





## Heightened realism

- ◆ Visual clinical conditions coloring NENASim's cheeks, chin, hands, and feet: cyanosis, jaundice, fever, and paleness
- ◆ Automatic head and limbs movement
- ◆ Blinking eyes and vocal sounds
- ◆ Fontanel with adjustable depth and a palpable pulse
- ◆ Pupillary light reflex and Babinski reflex





## Airway

### Basic and Advanced Airway Training

With anatomically correct structures, NENASim Infant Xtreme allows airway management with multiple devices.



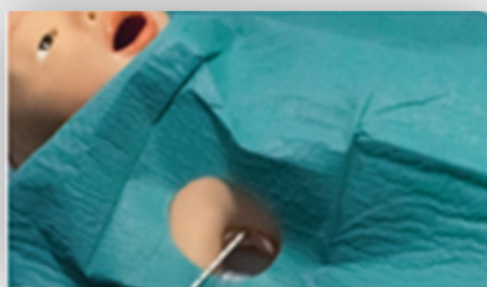


## **Breathing**

### **Pulmonary System**

With realistic chest and belly rise movements, NENASim Infant Xtreme can breathe spontaneously, be ventilated with bag-valve-mask, or be attached to real mechanical ventilators.

- ◆ Ventilation sensor with volume measurement
- ◆ Thoracic, diaphragmatic, and paradoxical breathing
- ◆ Pneumothorax
- ◆ Bilateral needle decompression
- ◆ Chest tube placement
- ◆ Lateral and posterior sites for lung auscultation



## Cardiovascular

### Cardiovascular System

- ◆ Multiple palpable pulses: brachial and femoral (bilaterally), fontanel, and umbilical
- ◆ Pulses palpation detected by sensors and recorded by the software
- ◆ Auscultation of the heart – normal and abnormal sounds





## **Resuscitation**

With anatomical landmarks and realistic compression resistance, NENASim Infant Xtreme is an ideal solution for CPR training.

The software displays compression and ventilation counters, and gives real-time feedback on CPR quality: frequency, depth, and release between compressions.



### **And much more...**

- ◆ Auscultation of bowel sounds
- ◆ Convulsion movements
- ◆ Umbilical cord can be filled with simulated blood
- ◆ Urethral catheterization
- ◆ Intraosseous access in the tibia



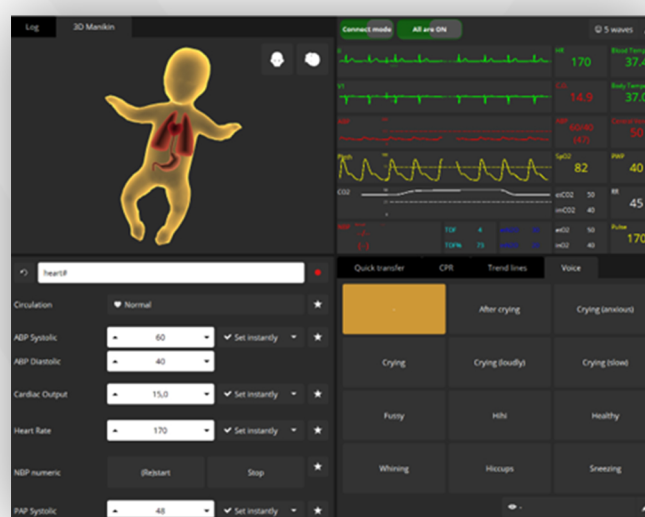


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## User Interface

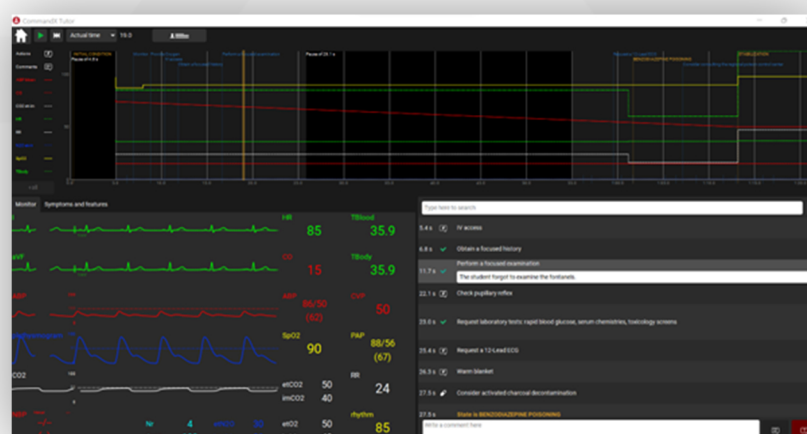
### COMMAND-X

Our user-friendly touchscreen interface offers manual and automatic modes. The instructor can control scenarios and parameters by wireless operation and remote control.



15 pre-programmed evidence-based scenarios that can be easily edited + Scenario Editor to create your own completely customizable scenarios.

All states, actions, activities, and added comments during a scenario or CPR training are logged in for posterior debriefing. The integrated debriefing tool also includes the possibility of recording sounds and videos.



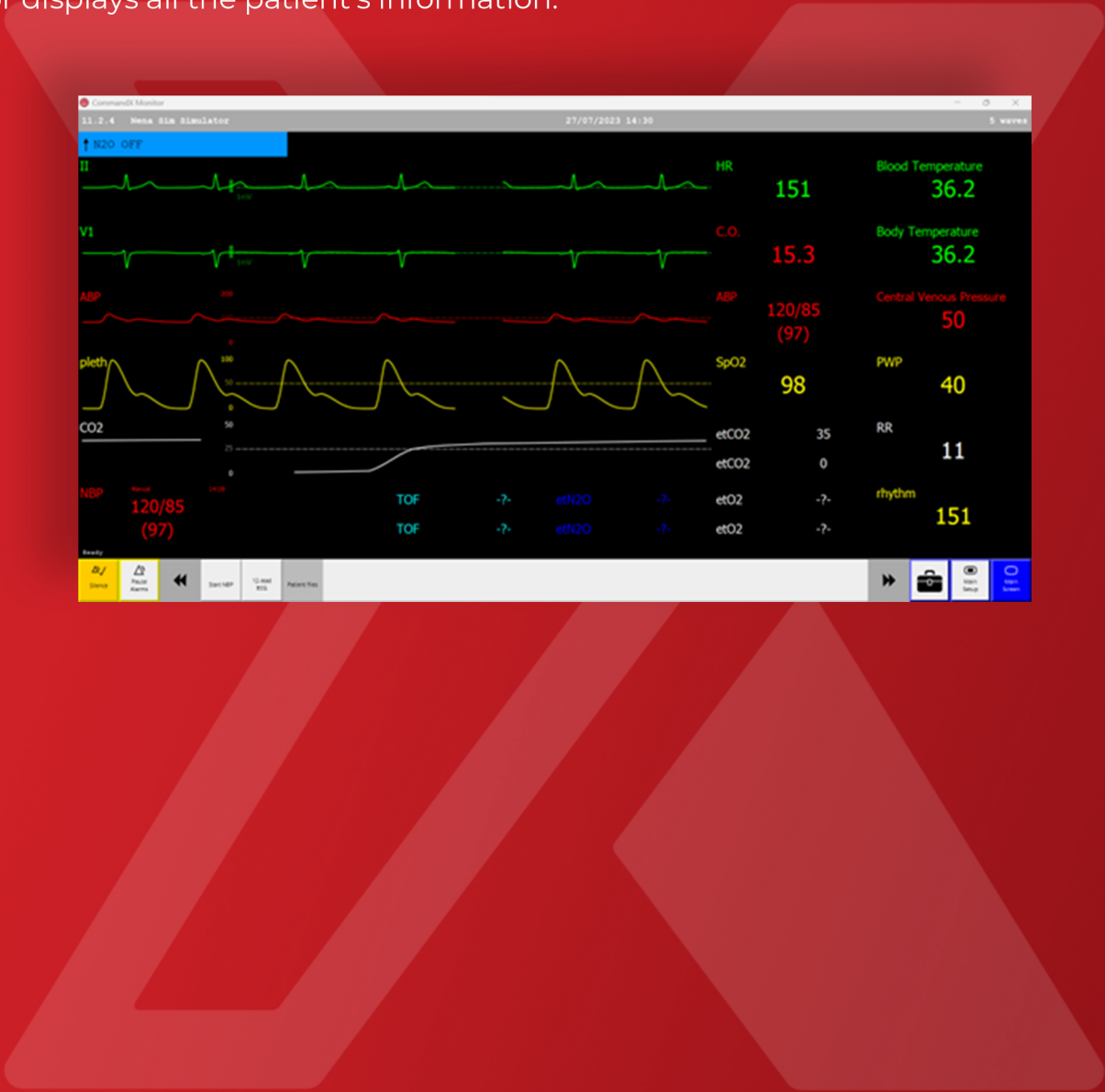


The screenshot displays the Anaesthesia Workstation (AW) interface, which provides a comprehensive overview of patient vital signs and physiological data. The interface is organized into several sections:

- Top Bar:** Displays the software version (11.2.4), the name of the simulator (Pneum. SIM. SIMULATOR), the date and time (27/07/2023 14:30), and the user's name (S. Wierzb).
- Left Panel:** Contains a list of monitored parameters with a blue bar indicating the active parameter (N2O OFF). The parameters listed are II, V1, ABP, pleth, CO2, NBP, HR, C.O., ABP, SpO2, etCO2, etCO2, etN2O, etN2O, etO2, etO2, and rhythm.
- Main Display Area:** Shows real-time waveforms for II, V1, ABP, pleth, and CO2. The HR waveform is also visible. The NBP waveform shows a reading of 120/85 (97). The etCO2 waveform shows a reading of 35. The etN2O and etO2 waveforms show readings of -7-.
- Right Panel:** Displays numerical values for various parameters:
  - HR: 151
  - C.O.: 15.3
  - ABP: 120/85 (97)
  - SpO2: 98
  - etCO2: 35
  - etCO2: 0
  - etN2O: -7-
  - etN2O: -7-
  - etO2: -7-
  - etO2: -7-
  - rhythm: 151
  - Blood Temperature: 36.2
  - Body Temperature: 36.2
  - Central Venous Pressure: 50
  - PWP: 40
  - RR: 11
- Bottom Bar:** Contains a series of icons for system control, including a power button, a pause button, a play button, a stop button, a reset button, and a help button.

The screenshot displays the Anaesthesia Workstation (AW) interface, which is a software application used for monitoring and controlling patient care during anesthesia. The interface is divided into several sections:

- Top Bar:** Shows the version number (1.2.4), the name of the simulator (Pneum. SIM. SIMULATOR), the date and time (27/07/2023 14:30), and the user name (S. Wiered).
- Left Panel:** Contains a list of parameters and waveforms:
  - II:** ECG waveform (green).
  - V1:** ECG waveform (green).
  - ABP:** Arterial Blood Pressure waveform (red).
  - pleth:** Plethysmography waveform (yellow).
  - CO2:** End-tidal CO2 waveform (black).
  - NBP:** Non-Invasive Blood Pressure (red text).
- Right Panel:** Displays numerical values for various parameters:
  - HR:** Heart Rate (151).
  - C.O.:** Cardiac Output (15.3).
  - ABP:** Arterial Blood Pressure (120/85 (97)).
  - SpO2:** SpO2 (98).
  - etCO2:** End-tidal CO2 (35).
  - etCO2:** End-tidal CO2 (0).
  - etN2O:** End-tidal Nitrous Oxide (-7).
  - etO2:** End-tidal Oxygen (-7).
  - Blood Temperature:** 36.2.
  - Body Temperature:** 36.2.
  - Central Venous Pressure:** 50.
  - PWP:** Pulmonary Wedge Pressure (40).
  - RR:** Respiratory Rate (11).
  - rhythm:** 151.
- Bottom Panel:** Contains a row of buttons for controlling the simulation:
  - Ready:** A yellow button.
  - Start:** A green button.
  - Pause:** A red button.
  - Stop:** A red button.
  - Reset:** A red button.
  - Help:** A blue button.





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## Accessories



**Romper and hat**



**Suitcase** for storage and transportation



**Umbilical cord**



**Bluetooth Stethoscope Simulator**



**IO Leg** Replaceable add-on for IO access



**Axillary patch**  
Replaceable part for chest tube insertion



**Charging cable**



NENASim Infant is available in five degrees of fidelity: Xtreme, Xpert, Xtra, Xcel, and Xact.

Choose the NENASim Infant that best suits your training goals and have the most realistic and life-like baby patient simulator in your simulation center.

**NENASim Infant Models Comparison Table**

	Xtreme	Xpert	Xtra	Xcel	Xact
Faithful reproduction of a baby's anatomy	✓	✓	✓	✓	✓
Life-like looking with soft silicone skin	✓	✓	✓	✓	✓
Airway management with multiple devices	✓	✓	✓	✓	
Ventilation with bag-valve-mask	✓	✓	✓	✓	
Heart massage with realistic compression resistance	✓	✓	✓	✓	
Feedback on CPR quality	✓	✓	✓		
Vocal sounds: laughing, coughing, crying, hiccups, and more	✓	✓			
Palpable pulses	✓	✓			
Auscultation of heart, lungs, and bowel sounds	✓	✓			
Pupillary and Babinski reflexes	✓				
Cyanosis, jaundice, redness, and paleness coloring the skin	✓				

*\*Customized solutions are also available. Contact us for more information.*

*The images shown are for illustration purposes only and may not be an exact representation of the product.*

## Specifications

### GENERAL

Full-body neonatal patient simulator: 59cm – 4.2kg  
Faithful reproduction of a baby's anatomy and physiology  
Life-like looking with soft silicone skin  
Three options of skin tone  
Flexible limbs, back, and neck  
Internal electrical power  
Tetherless and wireless  
Simulator can work both on battery or tethered power supply  
Operational on internal battery power for up to 6 hours<sup>1</sup>  
Bluetooth stethoscope simulator  
Easy to clean and disinfect

### AIRWAY

Airway maneuvers: head tilt, chin lift, and jaw thrust  
Realistic anatomy: tongue, epiglottis, vocal cords, trachea, and esophagus  
Oro- and nasotracheal intubation  
Airway management with multiple devices  
Oro and nasal fiberoptic intubation

### BREATHING

Realistic chest and belly rise movements  
Spontaneous breathing with variable rate  
Thoracic, diaphragmatic, and paradoxical breathing  
Visible cyanosis on NENASim's cheeks, chin, hands, and feet  
Ventilation sensor with volume measurement  
Ventilation with bag-valve-mask  
Can be attached to real mechanical ventilators  
Auscultation of the lungs: normal and adventitious sounds  
Lateral and posterior auscultation sites  
Individual lung or bilateral sound selection  
Pneumothorax  
Bilateral thoracic needle decompression  
Chest tube placement

<sup>1</sup> Battery life may vary depending on active settings.



## Specifications

### CARDIOVASCULAR

Adjustable heart rate, blood pressure levels, and ECG rhythm  
Pulses synchronized with ECG  
Multiple palpable pulses: brachial and femoral (bilaterally), fontanel, and umbilical  
Pulses palpation detected by sensors and recorded by the software  
Auscultation of the heart – normal and abnormal sounds  
Extensive ECG library and 12-lead ECG display

### RESUSCITATION

Anatomical landmarks for heart massage  
Realistic compression resistance  
Compressions generate ECG waves and palpable pulses  
Compression counter & ventilation counter and measurement  
Feedback on CPR quality: frequency, depth, and release between compressions  
Defibrillation and cardioversion simulation  
Detailed CPR evaluation and debriefing

### HEAD, TORSO & LIMBS

Blinking eyes & pupillary light reflex  
Adjustable eyelids movement and degree of pupil dilation  
Automatic head and limbs movement  
Fontanel with palpable pulse and adjustable depth  
Pre-recorded vocal sounds: breathing, coughing, laughing, crying, hiccups, and more  
New vocal sounds can be created and stored  
Simulation of cyanosis, jaundice, fever, and paleness coloring the cheeks, chin, hands, and feet  
Realistic convulsion movements  
Auscultation of bowel sounds - normal/abnormal  
The umbilical cord can be filled with simulated blood  
Urethral catheterization  
IV access in the arms  
Intraosseous insertion on the left tibia  
Babinski reflex

## Specifications

### BLUETOOTH STETHOSCOPE SIMULATOR

- Listen to isolated sounds without background noise
- Eight auscultation points on the torso
- Software feedback on the placement of the stethoscope simulator

### USER INTERFACE

- Manual and automatic modes
- Wireless operation and remote control
- Separate views of tutor interface and patient monitor
- User-friendly scenario set-up functions
- Control each robotic moving part to make realistic and lifelike movements
- 15 pre-programmed evidence-based scenarios that can be easily edited
- Scenario Editor Software: create new customizable scenarios
- ECG Editor Software: create new 12-lead ECGs
- Sound Editor Software: create and upload custom sounds: voice, heart, and lungs sounds
- Sensors detect and record student's actions
- All states, actions, activities, and added comments are logged in for posterior debriefing
- Built-in AVI solution: connect up to three webcams
- Wireless bedside monitor with a configurable display
- All parameters can be set by the instructor in real-time
- View custom files: laboratory results, patient history, images of X-ray, CT, ultrasound, etc.



## Contact us

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## Warranty

While we're confident that the MEDICAL-X's products are highly user-friendly, we also understand that this is an advanced product with the need for strong support and service. That's why we provide application training and guarantee the product for two years.

Additional service packages can also be delivered.





## About MEDICAL-X

MEDICAL-X is a Dutch company specialized in the design, development, manufacturing, marketing and distribution of simulation products for medical teaching and training.

Our mission is to provide healthcare professionals with simulation-based training solutions and cutting-edge technological simulators that are cost-effective and time-efficient to teach and train clinical skills without risk to actual human patients.

## Design philosophy

Realism is the key to our design philosophy! Simulator training gives medical teams the experience, competence, and confidence they desire. Realism adds to the quality and efficacy of training.

Our products are developed through extensive feedback programs to produce an engaging experience for healthcare professionals. Form and function come together in a realistic and interactive simulator, ready to be used in training for all levels of care.





# MEDICAL-X

Contact us



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