Patient Monitoring Systems

DESIGN FEATURES

HEYER VizOR is our premium solution for sophisticated patient monitoring applications.

VizOR comes in its standard configuration with a wide range of functions & features and makes it fit to match the requirements of high-sophisticated applications in OR, ICU and sickroom. Integrated high-quality modules (e.g. Masimo SpO2) ensure an accurate and stable measurement of the different parameters and a maximum safety for patient and doctor.

The Patient Monitoring System HEYER VizOR can also be combined with various Anesthesia Machines to create a complete and fully functional Anesthesia Workstation. By using Masimo Phaseln, Side & Main Stream Multi Gas Technology the VizOR can be completed as a supervisor for the total gas exchange of the patient.

A wide range of screen sizes from 6” to 18.5” meet the individual situations of the hospital demand – from transport to intensive care.

VizOR 6

Heyer VizOR 6 is a cost-effective and lightweight (4.3” display, weighting < 800gr) detachable patient monitor that integrates of the most advanced non-invasive patient monitoring capabilities available today. It can be used for bedside monitoring and as a transport vital signs monitor throughout the entire care path. The compact VizOR 6 monitor easily slides into various docking stations and includes network connectivity, VGA output, a recorder, and an extra battery. HEYER VizOR 6 ensures the same functionality as a full-size multi-parameter monitor – making it ideal for acute and general care floors, clinics, and home health care settings. The VizOR 6 can also be used in combination with defibrillators, ventilators and anesthesia machines providing complete vital signs and core patient monitoring parameters in a variety of clinical settings.

- Small and lightweight design concept
- A complete solution for all patient monitoring settings
- 4.3” color TFT display screen
- ECG (3/5 Lead), HR, SpO2 Masimo SET, RESP, NIBP (CAS/Standard), 2 TEMP, IBP (4 channels), Gas interface
- ARR and ST Segment Analyzer
- 2 hours rechargeable battery (exchangeable by user)
- Touch Screen and Direct Access Keys
- 96 hours trend

VizOR 6 options

- CO2 and Multi Gas Analyzer (Main Stream & Side Stream)
- Masimo Rainbow SET
- Wireless LAN Networking for Central System
- Cardiac Output (coming soon)
- 12 Lead ECG (coming soon)
**VizOR**

The compact and reliable monitor
- Portable color monitor with full parameters
- High performance monitoring in all areas of hospital
- Light & compact design concept
- 10" TFT color display with 6 traces
- Adult/neonatal applications
- Multi-Parameter: ECG, HR, RESP, SPO2, NIBP, 2 IBP, 2 TEMP
- CO2 and Multi Gas Analyzer (optional)
- Thermal Recorder (optional)
- Direct AC power & internal rechargeable battery for use in everywhere
- Rotary switch and dedicated direct access keys for intuitive & simple operation

**VizOR**

Multifunctional patient monitor
- Reliable monitoring in all areas of hospital
- Light & compact design concept
- 12.1" TFT color display with 6 to 8 Signal traces
- Adult/neonatal applications
- Multi-parameter: ECG, HR, RESP, SPO2, NIBP, 2 IBP, 2 TEMP
- CO2 and Multi Gas Analyzer (optional)
- BFA - Brain Function Assessment (optional)
- Thermal Recorder (optional)
- Direct AC power & internal rechargeable battery for use in everywhere
- Rotary switch and dedicated direct access keys for intuitive & simple operation
- Networking with VizOR Central Monitoring System

**VizOR** (SLIM VERSION)

Multifunctional patient monitor
- High performance multi parameter monitoring
- Complete solution for patient monitoring with 12 parameters
- ECG, HR, SPO2 Masimo SET, RESP, NIBP, 2 TEMP, 2 IBP
- Arrhythmia & ST Segment Analyzer
- 12" TFT Color bedside monitor with optional touchscreen
- Internal rechargeable battery
- Ethernet LAN networking
Options:
- Masimo Rainbow SET
- Multi Gas Analyzer
- 12 Leads ECG
- Cardiac output
- BFA - Brain Function Assessment (optional)
- Wireless LAN Networking

**VizOR**

Multifunctional patient monitor
- Contemporary design and concept
- 15" TFT color bedside patient monitor
- 6 to 8 signal traces and up to 10 Parameters: ECG, SPO2 (Masimo), RESP, NIBP, 2 TEMP, 2 IBP, CO2 (optional)
- ARR & ST Segment Analyzer
- Multi Gas Analyzer (optional)
- Direct AC power, DC power & internal rechargeable battery for use in everywhere
- Networking with VizOR Central Monitoring System

Options:
- Masimo Rainbow SET
- CO2 & Multigas analyzer (main stream & side stream)
- BFA - Brain Function Assessment
- Cardiac Output
- 12 Lead ECG
- 2 Traces Thermal Recorder
- Wireless communication
- Touch screen
- Dual version hosting VizOR 6 as a module
- ICP
- 4 IBP

**VizOR Central Station**

Central Monitoring System for HEYER VizOR Patient Monitoring Systems
- Optional dual-screen display, color TFT LCD screen with high-resolution
- Up to 64 real time waveforms for 16 beds simultaneously
- ECG (I, II, III, aVR, aVL, AVF, V), SpO2, RESP, CO2, Dual IBP waveforms
- Selective waveforms and parameters
- Various configurations of main screen
- Convenient operation with touch-screen or mouse
- Supporting LAN network
- Audible and visual alarms
- Up to 96 hours trend store and review
- Up to 720 alarm events store and review
- Up to 1000 NIBP measurements store and review
- Up to 48 hours of disclosure store and review
- Set up the color of waveforms/parameters
- Exchanging the position of patient window
- Supporting thermal recorder
- Data Backup
- Managing patient information
Specifications

General Specifications

Safety  Based on IEC 60601-1, Class I, Type CF for all modules (Except Multi-Gas & NIBP module = BF)
Usage  Continuous Operation Equipment
Harmful liquid proof degree  Ordinary equipment (without Liquid Proof)
Protection  Against electro surgery and defibrillator
AC power  90 – 260 V AC, 50/60 Hz
Internal battery  Sealed lead acid – 12 V. 3.3 Ah. Rechargeable Lithium Polymer: 11.1 V, 4.5 Ah, rechargeable (option)
Charging time: 16h

Usage with Sealed Lead Acid:
- VizOR 6: more than 120 min (full charge)
- VizOR 10: more than 120 min (full charge)
- VizOR 12: more than 60 min (full charge)
- VizOR 15: more than 100 min (full charge)

Usage with Lithium Polymer:
- More than 3.5 hours

DC power plug  12 – 14 V, 3 A (6A with recorder)
Dimensions (cm)  W x H x D
- VizOR 6: 15 x 10.9 x 6.7
- VizOR 10: 26 x 29 x 19
- VizOR 12: 31 x 28 x 19
- VizOR 15: 42 x 36 x 17
- VizOR 17: 45 x 35 x 16

Weight (kg)
- VizOR 6: Approx. less than 1 kg
- VizOR 10: Approx. 5.5
- VizOR 12: Approx. 6
- VizOR 15: Approx. 6
- VizOR 17: Approx. 7

Display
- Color display
  - VizOR 6: 4.3" TFT, 480x2722
  - VizOR 10: 10.4" TFT, 800x600
  - VizOR 12: 12.1" TFT, 800x600
  - VizOR 15: 15" TFT, 1024x768
  - VizOR 17: 18.5" TFT, 1366x768

Numeric parameters
- Waveforms: ECG, SpO2, RESP/Gas, IBP 1, IBP2, EEG, C.O. (freezable)
- Sweep speed: 12.5, 25, 50 mm/sec
- HR, PVCs, ST, Pulse Rate, SPO2, RESP/Gas, IBP 1, IBP2, EEG, C.O. (freezable)
- Numeric parameters: HR, PVCs, ST, Pulse Rate, SPO2, RESP/Gas, IBP 1, IBP2, EEG, C.O.
- Operation method: Key, Rotary knob, Membrane
- Input / Output: Network Digital, Serial, RS422, Full Duplex, TCPIP
- Recorder option: General scanning / Thermal printing
- Printing speed: 6.125, 25, 50 mm/sec
- Paper: 58 mm by 20 m roll
- Temperature
  - Probe type: YSI-400 compatible
  - Range: 0 – 50°C
  - Accuracy: ±0.2°C

Respiration

Method  Impedance
Base resistance  250 – 1250 Ohm
RESP SWEEP Speed  3, 6, 12.5, 25 mm /s
Dynamic range  0.2 – 2 Ohm
Breath rate range  0 – 253 bpm
Accuracy  ±2%

Alarm

Sources  Error messages, all other parameter limits
Alarm on / off  Selectable for all parameter
Lead fault alarm  Auditory and visual
Alert  Blinking on display, Volume selectable Audio Alarms, Light indicator

Trend

Sources  HR, PVCs, ST, AFIB, SpO2, RR, T1, T2, IBP1 (SYS, DIA, MAP), IBP2 (SYS, DIA, MAP), EtCO2, FICO2, AWRR, ETO2, FIO2, EN2O, FIN2O, EtAA, FIAA, C.O.
Trend Time  15 min, 30 min, 45 min, 1 min, 2, 4, 8, 12, 16, 24, 36, 48, 60, 72, 96 hours
Resolution  1 sec

Arrhythmia Analysis

Type  ASYS, VFIB, AFIB, VTAC, RUN, AVIR, COUPLET, BIGEMINY, TRIGEMINY, TACHY, BRADY, PAUS, FREQUENT PVCs
Learning  Rapid learning; only 20 sec required for recognition of dominant rhythm
Method  Real time Arrhythmia Detection with innovative feature
Memory  Capability of storing the latest 150 ARR events (waveform and parameter)

ST Analysis

Display resolution  0.01 mV
Measurement range  -2 mV to +2 mV
Alarm range  -2 mV to +2 mV
Features  User adjustable isoelectric and ST Point Trending of ST values
Update period  5 sec

SPO2 (Pulse Oximetry) Masimo SET

Method  2 wave length pulse wave type
SPO2 Measuring Range  0% to 100%
SPO2 Alarm Range  50% - 100%
SPO2 Accuracy  71% - 100% ± 2%
50% - 70% ± 3%
Pulse rate range  25 – 50 bpm

ECG

Leads  Selectable 3, 5 – 10 wires optional
For 3 wire: I, II, III
For 5 wire: I, II, III, V, aVR, aVF, aVL
For 10 wire: I, II, III, V, aVR, aVF, aVL, C2, C3, C4, C5, C6
Waveforms  4 Traces / up to 7 Waveforms
Dynamic range  ±5 mV
Leakage current  < 10µA
Lead off current  < 90 nA
Gain  4, 2, 1, 1/2, 1/4, auto
Calibration  1 mV, 0.5 sec
Filters  “MONITOR” (0.5 – 24Hz)
“NORMAL” (0.5 – 40 Hz)
“EXTENDED” (0.05 – 100 Hz)
CMRR  >98 dB
Internal noise  < 30 µV RTI
Input impedance: >5 MOhm
QRS detection
Duration: 40 – 120 msec
Amplitude: 0.25 – 5 mV for Adult/Pediatric
0.2 – 5 mV for Neonate
Heart rate range
15 – 300 bpm Adult/Pediatric
15 – 350 bpm for Neonate
Accuracy: ±1% for 2bpm
Tall T-wave
Reject up to 1.2 mV Amp
Pace Detection / Rejection
Duration: 0.1 – 2 msec
Amp: ±2 to ±700 mV (without over / undershoot)
Rejection from heart rate counter
Re-insert into ECG to display on screen
Ineffective pace rejection
HR: 0, Pace 60 / HR:60, Pace 60 / HR:30, Pace 80
Beside rejection of arterial paces preceded ventricular paces by 150 or 250 msec
Protection
Defibrillator and electro surgery
Standards
ANSI / AAMI EC-13

NIBP
Measurement Method
Oscillometric
Measurement mode
Manual / Automatic
(intervals between 1 min – 24 hours) / STAT
Measurement time
20 – 25 sec (excluding cuff pressurizing time)
Measurement range
Adult:
SYS: 30 – 255 mmHg
DIA: 15 – 220 mmHg
MAP: 20 – 235 mmHg
Neonate:
SYS: 30 – 135 mmHg
DIA: 15 – 110 mmHg
MAP: 20 – 125 mmHg
Pressure transducer accuracy
± 3 mmHg full range
Initial inflation target
Adult 150 mmHg
Pediatric 140 mmHg
Neonate 85 mmHg
Overall system efficacy
Meet ANSI/AAMI SP-10/2002
Memory
Up to 500 records

IBP
Channel
2 Channels
Measurement range
SYS: -50 – 300 mmHg
DIA: -50 – 300 mmHg
MAP: -50 – 300 mmHg
Pressure sensor sensitivity
5µV/v/mmHg
Pressure sensor impedance
300 – 2500 Ohm
Resolution
1 mmHg
Accuracy
2 % or 2mmHg (each one is greater) without Transducer
Alarm range
-50 – 300 mmHg
Filters
Adjustable 8, 16, 22 Hz

Main-Stream Multi Gas (optional) IRMA CO2, AX+
Measuring parameters
IRMA CO2
CO2, AWRR
IRMA AX+
CO2, N2O, 5 anesthesia agent
(HAL, ENF, ISO, DES, SEV – Auto ID), AWRR

Side-Stream Multi Gas (optional) ISA CO2, AX+, OR+
Measuring parameters
ISA CO2
CO2, AWRR
ISA AX+
CO2, N2O, 2 paramagnetic, 5 anesthesia agent
(HAL, ENF, ISO, DES, SEV – Auto ID), AWRR
ISA OR+
CO2, N2O, O2 paramagnetic, 5 anesthesia agent
(HAL, ENF, ISO, DES, SEV – Auto ID), AWRR
Oxygen
Integrated ultra-fast response time galvanic oxygen
Sensor Type
sensor (>62500 oxygen hours)

BFA – Brain Function Assessment (optional)
Function
Measure the direct effect of anesthesia and sedative drugs on brain

Environmental
Temperature
Operating: 5 – 40°C (for Gas Module: 10 to 35°C)
Storage: -20 to 50°C
Humidity
20 – 90% (non-condensing)
Altitude
-200 to 3000 m

VizOR6 – Additional Specifications
Application
Small enough to carry, powerful enough to monitor patient anywhere
Environmental
Meeting rigorous environmental standards, IPX II, Vibration, Shock
Protection
EMC, Electrosurgery, Electroshock
Power
AC adapter, rechargeable Battery, user replaceable and 12-14V/DC ext. power supply (e.g. in ambulance)
Run time
Up to 3 hours (full charged)
User interface
Touch-Screen, Membrane
IBP
Up to 4 (coming soon)
Drug Calculation
(c coming soon)
OXYCRG
(c coming soon)

VizOR6 – Options
CO2 & Multi-Gas Analyzer (Main Stream & Side Stream)
Brain Function Assessment (BFA)
Masimo Rainbow SET
Thermal Recorder
Wireless LAN Networking
Dual Display
Remote Control
Cardiac Output (coming soon)
12 Lead ECG (coming soon)
Various chargers / docking stations

VizOR7 – Options
CO2 & Multi-Gas Analyzer (Main Stream & Side Stream)
Possibility of hosting VizOR® as a complete module
Brain Function Assessment (BFA)
Masimo Rainbow SET
Thermal Recorder with 2 Traces
Drug Calculation (coming soon)
Wireless Communication
Wired Remote Control
Cardiac Output
12 Lead ECG
4 Channels IBP
Touch Screen
OXYCRG
ICP

Subject to changes without prior notice!