**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 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 connection (2 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 connection

**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 up to 32 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, optional external laser printer
- 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
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 60 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)

<table>
<thead>
<tr>
<th>Model</th>
<th>W</th>
<th>H</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>VizOR 6</td>
<td>15</td>
<td>10.9</td>
<td>6.7</td>
</tr>
<tr>
<td>VizOR 10</td>
<td>26</td>
<td>29</td>
<td>19</td>
</tr>
<tr>
<td>VizOR 12</td>
<td>31</td>
<td>28</td>
<td>19</td>
</tr>
<tr>
<td>VizOR 15</td>
<td>42</td>
<td>36</td>
<td>17</td>
</tr>
<tr>
<td>VizOR 17</td>
<td>45</td>
<td>35</td>
<td>16</td>
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Weight (kg)

<table>
<thead>
<tr>
<th>Model</th>
<th>Approx.</th>
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<tbody>
<tr>
<td>VizOR 6</td>
<td>&lt; 1 kg</td>
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<tr>
<td>VizOR 10</td>
<td>5.5</td>
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<td>VizOR 12</td>
<td>6</td>
</tr>
<tr>
<td>VizOR 15</td>
<td>6</td>
</tr>
<tr>
<td>VizOR 17</td>
<td>7</td>
</tr>
</tbody>
</table>

Display

Color display

- VizOR 6: 4.3" TFT, 480x2722 flexible display Configuration
- VizOR 10: 10.4" TFT, 800x600 6 Traces / 8 Parameter
- VizOR 12: 12.1" TFT, 800x600 6 to 8 Traces / 10 Parameter
- VizOR 15: 15" TFT, 1024x768 6 to 8 Traces / 10 parameter
- VizOR 17: 18.5" TFT, 1366x768 6 to 12 Traces / 10 Parameter

Waveforms
ECG, SpO2, RESP/Gas, IBP 1, IBP2, EEG, C.O. (freezable)

Sweep speed
12.5, 25, 50 mm/sec

Numeric parameters
HR, PVCs, ST, Pulse Rate, SpO2, SIBP (SYS, DIA, MAP), IBP1, (SYS, DIA, MAP), RR, T1, T2, DT, AWRR, Alarm Limits, EtcO2, FICO2, Etn2O, Fin2O, Eto2, Fio2, EtO2, EtnO2, FiO2, CS%, BS%, EMG%, SQI%, C.O.

Operation method
Key, Rotary knob, Membrane Touch Screen for VizOR 12 (option), VizOR 17 (option)

Input / Output
Network
Digital, Serial, RS422, Full Duplex, TCPIP
Connection
8 or 16 beds to one Central Station

Recorder (option)
Model
General scanning / Thermal printing
Printing speed
6. 12.5, 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, Etn2O, Fin2O, Eto2, Fio2, EtnO2, FiO2, 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, AIBR, COUPLE, 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%

SPO2 Accuracy
50% - 70% ± 3%

Pulse rate range
25 – 250 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, CS, C6

Waveforms
4 Traces / up to 7 Waveforms

Dynamic range
±5 mV

Leakage current
< 10 µA

Lead off current
< 90 nA

Gain
4, 2, 1, 1/2, 1/4, auto

Calibration
1 mV, 0.5 sec

Filters
“MONITOR” (0.5 – 24 Hz)

“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
- Reject 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, 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
  - 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. Electro surgery, Electro shock

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
- (coming soon)

OXYCRG
- (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)

Various chargers / docking stations

VizOR7 – Options

CO2 & Multi-Gas Analyzer (Main Stream & Side Stream)

Possibility of hosting VizOR6 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 (coming soon)

Various chargers / docking stations

Subject to changes without prior notice!
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