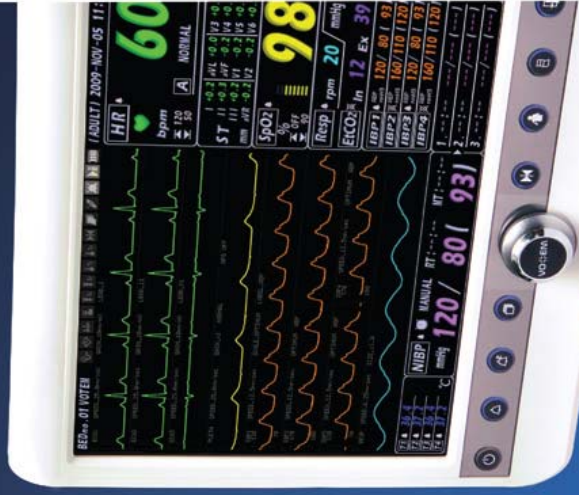


# VP1200



Excellent Monitoring  
For Best Clinical Care



# VP1000



- ECG (3CH)
- SpO<sub>2</sub>
- NIBP
- RESP
- 2TEMP
- 2IBP
- HR/PR
- APG
- HRV
- EKG (12CH)
- 4TEMP
- 4IBP
- ICO
- EtCO<sub>2</sub>
- VGA out ECG out
- Touch Screen
- qCON (BIS)
- MASIMO SpO<sub>2</sub>
- MASIMO Multi-Gas

## VP1200, VP1000 Excellent Monitoring For Best Clinical Care

- 12.1"(10.4") high resolution(800x600) with maximum 10 waveforms
- Standard Configuration : ECG, SpO<sub>2</sub>, NIBP, Resp, 2Temp, 2IBP
- 6 kinds of Virtual Screens
- 3CH ECG : Full 7 ECG & ST Segment analysis (Lead I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, V6)
- 12CH EKG : Full 12 EKG & ST segment analysis (Lead I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, V6)
- 13 Arrhythmia analysis & Pacemaker detection
- Saves tabular & graphic trend data for 7days and event management
- Multi high-end Functions
  - Drug Dose Calculation, ECG Recall, Mini Trend, ICO, Color change, NIBP STAT, NIBP VENOUS STAT, OXY-CRG, Patient information, Temp TD
- Touch Screen(Optional)
- Easy S/W upgrade with SD Card(Max 8Gbyte)
- Li-Ion battery (Std :1Pack : 2hrs, 2Packs : 4hrs)
- Wired and Wireless LAN
- Respiration EtCO<sub>2</sub> Mainstream (C5), Sidestream (LoFlo)
- HRV, APG Detection
- Masimo Multi-gas Mainstream(IRMA AX+), Sidestream(ISA AX+, OR+), SpO<sub>2</sub> qCON(BIS)



# VP1200 & VP1000

## Multi-parameter Patient monitor



VP1200



VP1000

### • Perfect 3CH ECG(Std.) and 12CH EKG(Opt.) will make you ECG analysis specialist.

- Clear waveforms by VOTEM's Digital Filter Technology
- 3CH ECG(Std.) displays full 7 ECG waves & ST Segment analysis (Lead I, II, III, aVR, aVL, aVF, V)
- 12CH EKG(Opt.) displays full 12 EKG waves & ST Segment analysis (Lead I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, V6)
- 13 Arrhythmia analysis & Pacemaker detection (TAC, BRD, PVC, VTAC, ASY, BGM, TGM, VENT, VFIB, CPT, TPT, MIB, RonT)
- Simultaneous views, customizable adjustment and monitoring 12 ECG leads of ST Segment analysis Adjustable ISO and J points, plus the ability to view both learned and averaged ST complexes provide exceptional flexibility.



7CH ECG Screen



12CH EKG Screen

### • Supreme Standard configuration and extensionality

- Standard : ECG, SpO2, NIBP, Respiration, 2Temp, 2IBP
- Optional : Total 4Temp, 4IBP, ICO, ETCO2, 12CH EKG, Touch Screen, 3CH Printer, Masimo SpO2 & Multi-gas, qCON(BIS)



### • Small size but large virtual screens

- 12.1" Monitor provides 72.6"(12.1" x 6) view effect by using 6 Virtual Screens.
- 10.4" Monitor provides 62.4"(10.4" x 6) view effect by using 6 Virtual Screens.



Full Parameter Screen



12CH (7CH) ECG Screen



Event Management Screen



Simple ESN Screen



Trend Screen



Large Numeric Screen

12.1" but 10.4" 72.6" 62.4" View Effect

### • Multi high-end functions

#### Drug Dose calculation



Helps you to manage a total quantity of drugs to be delivered to patient over time.

#### ECG Recall and Analysis



Recalls 20 seconds event data with graphic, and 2 secs long data can be zoomed to observe and analyze.

#### Mini-Trend



You can see 2hrs long mini-trend on the main screen.

#### ICO



Measures Cardiac Output (CI, SV), SI, USWI, IUSWI, PUSWI, RUSWI, SVA, SVRI, PVR, PVRi



Selectable color configuration of waveform and numeral for all parameters up to 18 colors.



NIBP can be measured from 5 to 15 minutes automatically.

#### Patient Information



Stores patient's hospitalization date, ID, name, gender, date of birth, weight, and height.

#### Event Management



Up to 20 saved individual events let you see what you want to see easily.

*"Experience the superiority of high-performance monitor"  
 "You can get more and better than anything you have ever chosen before"*

**• Saves tabular & graphic trend data for 7days**

- All parameters
- 10,080 sets(1set per minute) of data can be stored, reviewed, and printed out.



Touch Screen

**• Touch Screen (Opt)**

- Easy operation with touch option.



Trend Screen

**• Easy S/W upgrade with SD Card (Max. 8GB)**

- You can upgrade the s/w continuously without disassembling the monitor by using SD card.



S/W upgrade Screen



**• Durable-light Li-ion battery operation**

- Std (1Pack) : 2hrs or more
- Opt (2Packs) : 4hrs or more
- 4.0 kg weight (Including Battery)




**• ECG output (Opt)**


- You can download and capture ECG analog signal for more analysis.
- Provides direct connection between monitor and defibrillator




**• The best EICO2, qCON(BIS) and Multi-gas Module**




**CAPNOSTAT 5 Mainstream CO2 Sensor**  
21st Century CO2 Technology for main stream CO2 monitoring in critically ill, intubated patients.




**LOFLO Side stream CO2 Sensor**  
21st Century CO2 Technology for side stream CO2 monitoring in both intubated and non-intubated patients.



**Quantum Medical qCON**



**Masimo Multi-Gas**



**MASIMO SpO2**

**SPECIFICATIONS**

**General**

**Display**

- 12.1 inch (800 X 600)
- Up to 10 waves trace On/Off (3ch ECG, SpO2, 4 BP, Resp or EICO2)
- Full ECG 7 waves Display, (I, II, III, aVR, aVL, aVF, V)

**Parameters**

- ECG, SpO2, NIBP, 4 BP, Resp, 4 Temp, EICO2
- HRV, APG analysis, COqCON(BIS), Multi-Gas



**Interface**

- RS-232 port, VGA Port, LAN, ECG output Port(opt.),
- SD Memory Card Port,

**Power**

- AC 100~240V, 50/60Hz, 80VA (MAX)
- BATTERY : L-Ion (2 hours) (opt : 2 Packs (4hours) )

**Thermal Printer (Option)**

- 3 channel
- Speed : 12.5, 25, 50 mm/sec
- Paper size : 88 mm

**Trend**

- Data Storage : 7 days (Standard)
- Tabular and Graphic Data Interval : 1, 5, 15, 30 min and 1 hours
- Saves up to 20 Event data

**Language**

- ENGLISH, FRENCH, SPANISH, GERMAN, ITALIAN, RUSSIAN, TURKISH, CZECH, Romanian, Portuguese

**Physical Dimension**

- 280mm X 280mm X 175mm
- Weight : 4.3kg(VP1200), 4.1kg(VP1000) including battery

**ICO (Option)**

- CI, SV, SI, LVSW, RVSW, RVSWI, SVR, SVRI, PVR, PVRI
- Catheter : Swan-Ganz standard/intracardiac pulmonary Artery Catheter (131HF7, 744HF7S)
- Edwards Lifesciences

**qCON (Option)**

- Range : qCON 0~99, 1sec display update
- SOI Range : 0~100%
- EEG : ± 475 uV, 16 bit resolution

**Masimo SpO2 (Option)**

- Range : 0~100%
- Accuracy : ±2%(70~100%, Adult/Pediatric, Non-motion)
- Pulse rate Range : 25~250bpm

**Performance**

**ECG**

- LEAD
- Channel
- HR Range
- GAIN
- Sweep Speed
- Filter
- Arrhythmia Detection
- ST Analysis
- HR Calculation

**SpO2**

- Range
- Accuracy
- Pulse range
- Accuracy
- Low Perfusion
- Setting Time
- GAIN
- Sweep Speed

**Respiration**

- Range
- Apnea
- Waveform

**NIBP**

- Method
- Measurement Range
- NIBP STAT
- NIBP VENOUS STAT

**IBP**

- Channel
- Range
- Accuracy
- Catheter

**TEMP**

- Channel
- Range
- Accuracy

**EICO2 (Option)**

- Measurement Mode
- Range
- Resp Rate

**Multi-Gas (Option)**

- Gas : CO2, N2O, HAL, ISO, ENF, Sev, DES, O2
- Range :
- CO2 : 0~25%, N2O: 0~100%, HAL, ISO, ENF : 0~25%, Sev : 0~25%, DES : 0~25%, O2 : 0~100%

**VP1200/1000**



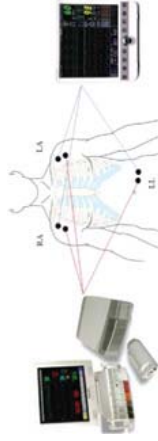


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## CLINICAL TRIAL STUDY : The performance comparative evaluation between VOTEM's MRI compatible patient monitoring system with Philips IntelliVue MP70

### 1. ECG : locate 6 leads (3 leads on each monitor) on a patient

- Check the max/min heart rate from the each monitor for a minute
- Check the heart rate for a minute for 10 times (total 10 minutes) for one person, and do the same procedures for 100 people.
- Compare the results from the each monitor



### 2. SpO2 : connect the two different SpO2 sensors from the each monitor to the applicant's left index finger and middle finger

- Check the max/min HR and SpO2 from the each monitor for a minute
- Check the heart rate for a minute for 10 times (total 10 minutes) for one person, and do the same procedure for 100 people.
- Compare the results of the each monitor



### 3. NIBP

- After checking the first NIBP, wait 10 minutes for the next step
- One NIBP check contains the following procedures; checking the NIBP of an applicant alternately from the each monitor after checking the first NIBP with a manual manometer (mercury sphygmomanometer).  
Compare the data after five NIBP checks
- When using a mercury sphygmomanometer, record only systolic/diastolic BP, and record average BP when using the two monitors
- Perform five NIBP checks for 100 people



### 4. Results

- The reliability of the repeated measurement of a manual mercury sphygmomanometer : 0.947 (systolic BP), 0.934 (diastolic BP)
- The reliability of the repeated blood pressure measurement of the Votem's VP1200 : 0.941 (systolic BP), 0.934 (diastolic BP)
- The reliability of the repeated blood pressure measurement of the Philips' MP70 : 0.947 (systolic BP), 0.934 (diastolic BP)
- The reliability of the repeated SpO2 measurement of the Votem's VP1200 : 0.888 (systolic BP), 0.932 (diastolic BP)
- The reliability of the repeated SpO2 measurement of the Philips' MP70 : 0.856 (systolic BP), 0.933 (diastolic BP)
- The reliability of the repeated heart rate measurement of the Votem's VP1200 : 0.978
- The reliability of the repeated heart rate measurement of the Philips' MP70 : 0.980

The above results of the reliability are based on the Cronbach's alpha. Seen from the results, both Votem's and Philips' equipment have shown the identical excellent repeated measurement reliability, as well as the SpO2 measurement.



The Cronbach's alpha of the two equipment have shown the high conformity (Cronbach's alpha of SpO2=0.954, heart rate=0.931). However, during the heart rate measurement of the participants, the one patient showed an outlier, which was shown as 60 bpm on VP1200, and 120 bpm on MP70. After checking with the manual measurement, Philips' MP70 made an error of doubling the result of heart rate, and it was judged that the analysis was derived from the wrong ECG wave.

Mercury manometer vs MP70 Sys BP



Mercury manometer vs MP70 Dia BP



VP1200 vs MP70 Sys BP



VP1200 vs MP70 Dia BP



On the mutual conformity analysis of systolic and diastolic blood pressure measurement of the manual mercury sphygmomanometer, VP1200, and MP70, the three equipments have shown excellent conformity showing over 0.9 Cronbach's alpha. Thus, VP1200 shows the identical performance of heart rate measurement with the manual mercury sphygmomanometer, and Philips' MP70.

### 5. Conclusion

Seen from the above results, Votem's VP1200 and Philips' IntelliVue MP70 show the same results of SpO2, heart rate, and pulse rate, and thus it can be concluded that the VP1200 performs the identical performance of MP70's.