

BeneHeart D6

Defibrillator/Patient Monitor

Lecturer
11/12/2010

mindray

- **Product positioning**
- **Ergonomic design and usability**
- **Reliable therapy solution**
- **Rich monitoring functionality**
- **Powerful data management**
- **Selling points summary**
- **Competitors**



Product Positioning

Configurations

Standard:

- TFT screen
- Manual Defibrillation
- AED
- 3/5 lead ECG with ARR
- Resp
- Recorder
- 1 Li-ion battery
- External paddles

Optional:

- 12-lead ECG
- Pacing
- SpO2 (Mindray/Masimo/Nellcor)
- 2-Temp
- NIBP
- 2ch IBP
- Microsatream / Sidestream EtCO2
- 2nd Li-ion battery
- Multi-function pads kit (disposable)
- Carry Case

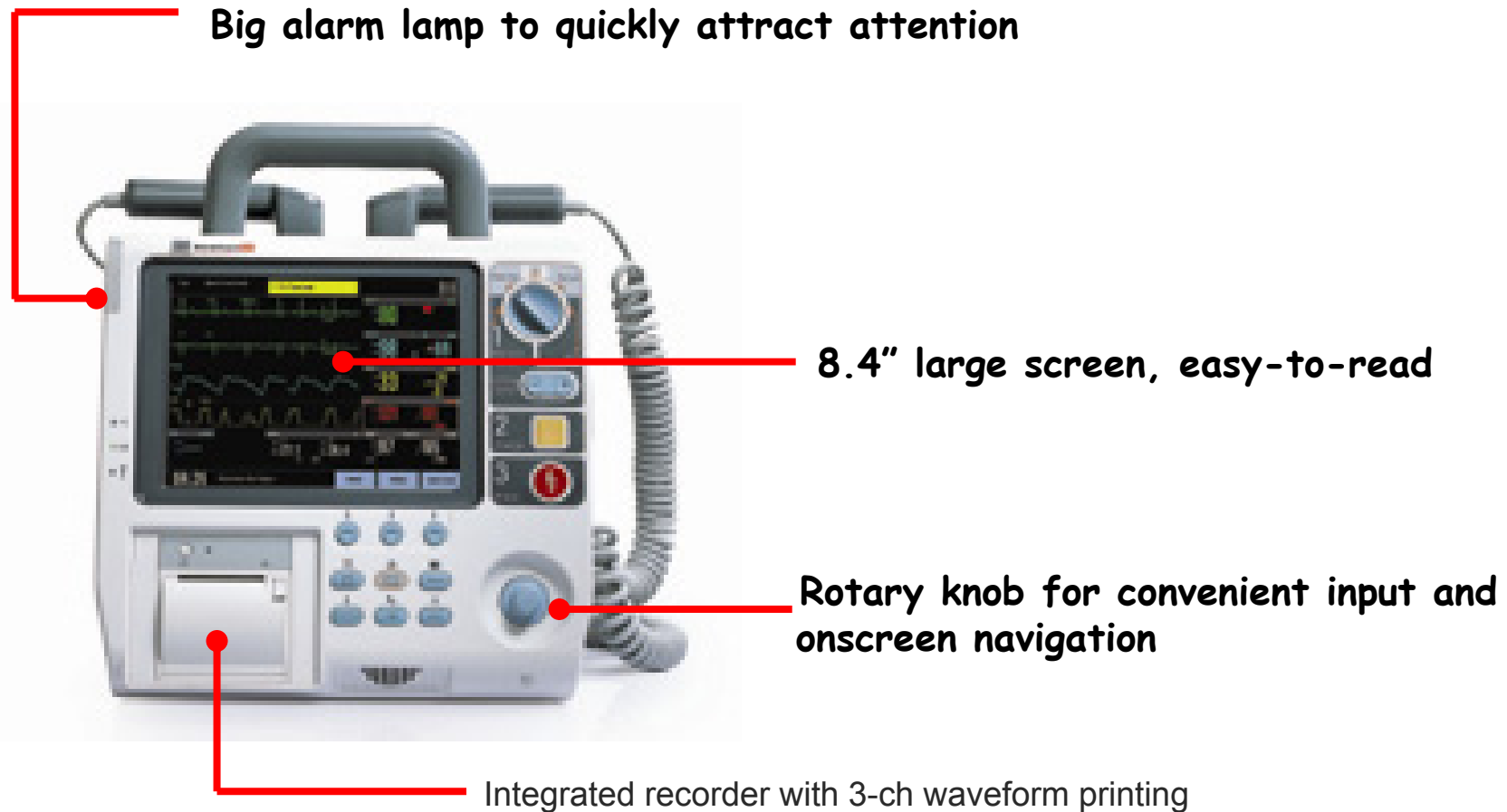
Target Market

- EMS, Ambulance
- ICU, OR, NICU, CCU
- Emergency Room, General Ward
- Medical Colleges, Training Center

Ergonomic Design and Usability

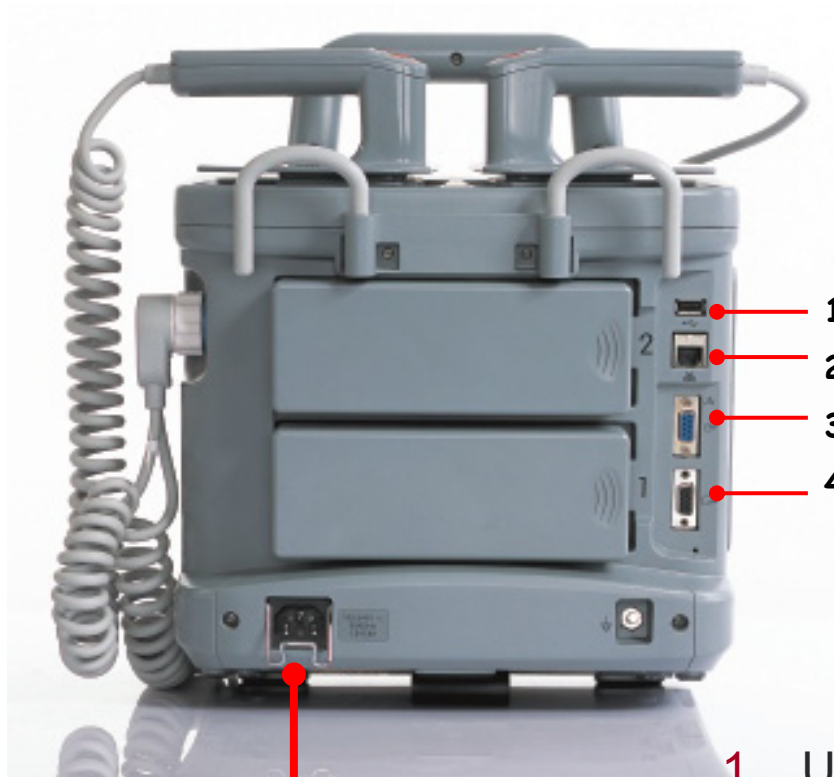
- **Compact: 295 × 218 × 323 mm (with external paddles)**
- **Degree of protection against dust and water : IP34**
- **Impact test: 0.75m**





Buttons on front panel for quick access of common used functions





Power cord lock to insure power input in emergency situation

1. USB port (data transfer to PC by flash disk)
2. RJ45 port (for upgrading)
3. Multifunctional port for ECG output and defib synchronization input
4. VGA port for extended display



Handle for easy carrying



Carrying case enhanced the protection for out-hospital use

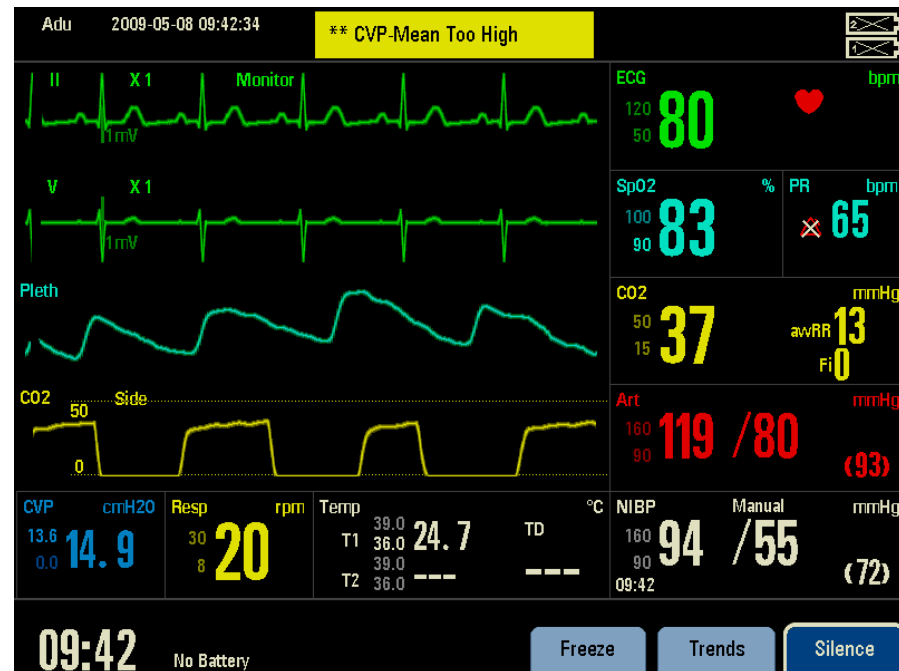


Vehicle mounting kit



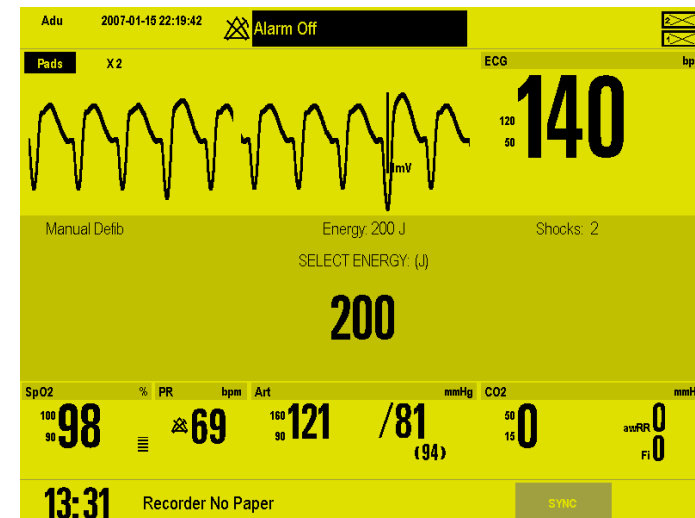
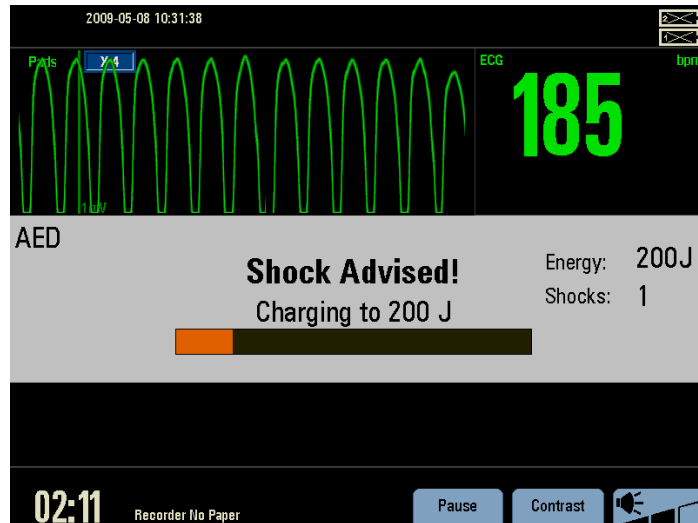
Solid bedrail hook for stable use during transport

- Color display for clear viewing
 - 8.4" TFT display (800×600 pixels)
 - Max 4 waveforms
 - 16s on screen ECG waveform increasing the chance to detect abnormal signal



High contrast display

- For use in high/strong illumination, especially in outdoor environment



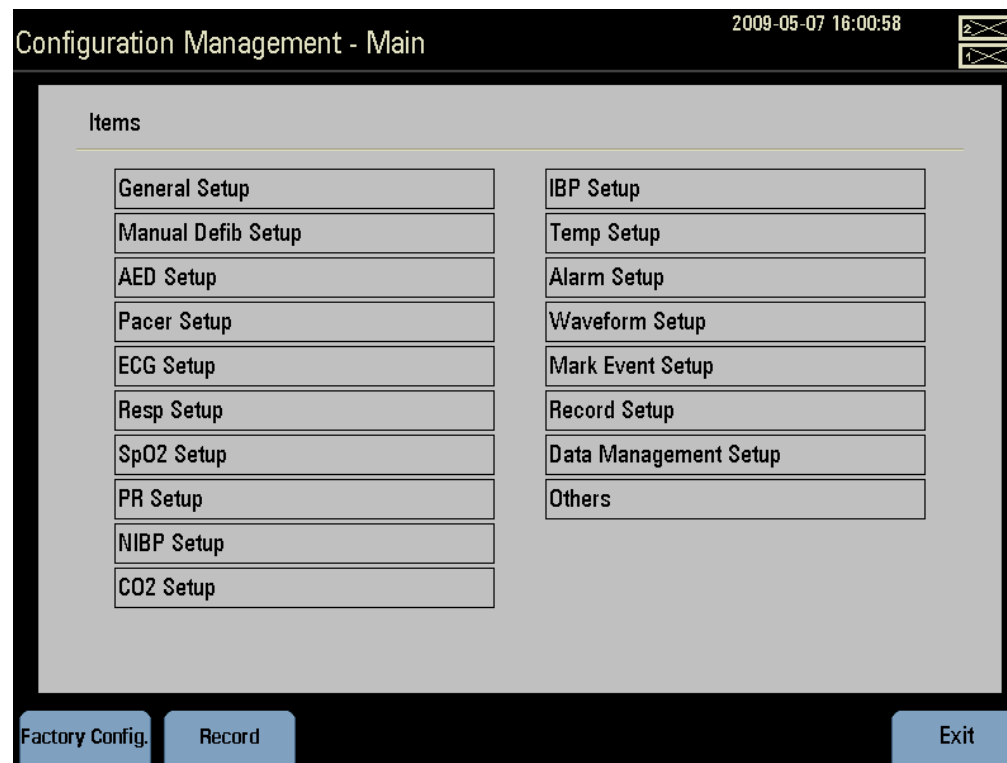
Freezing Waveforms

- For fast reviewing of latest 120s waveforms



— Configuration Management

Centralize defibrillation and monitoring settings in one interface, easy to set each configuration at one time



Reliable Therapy Solutions

- **Simple to operate**
 - Modes select intuitively
 - Manual defibrillation with only 1-2-3 steps



- **Power management**
 - Auto-detecting AC or DC power source
 - DC-AC adapter for ambulance use
- **Li-ion Battery**
 - High quality free of maintenance
 - Max 2 pieces to support 200 shocks/ 6h' pacing
 - Battery LED to indicate power capacity percentages



- **External Paddles**
 - Cable and paddles in one piece, easy to sterilize
 - Paddle Base with tight locks, also avoiding wrong placement
- or Pediatric paddle sizes, simple to switch

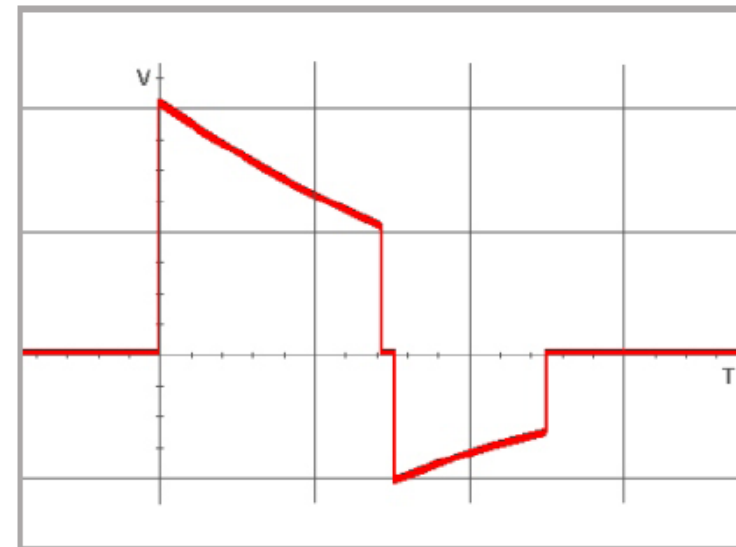


- **External pads**
 - Adult and pediatric kits selectable
 - Multifunction pads for AED, manual defibrillation and pacing use
 - Trustworthy quality from world professional supplier

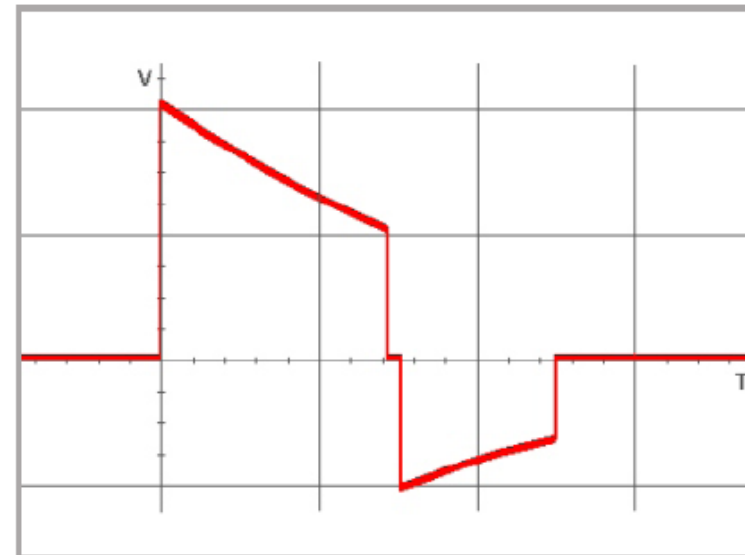


■ Biphasic Technology – I

- is a Biphasic Truncated Exponential (BTE) waveform
- A typical and widely accepted Biphasic waveform
- With less energy and higher success rate of cardioversion



- **Biphasic Technology – II**
 - Individual discharge by two accumulators
 - Better control the energy delivery

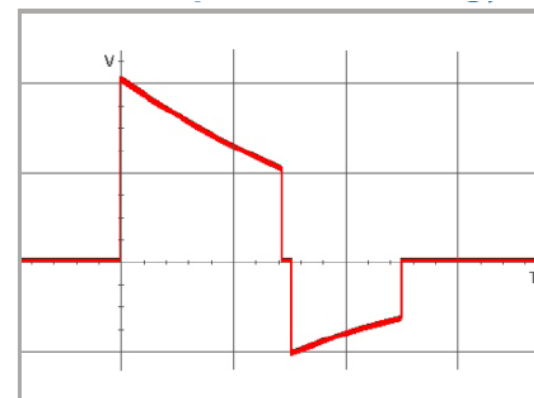


■ Biphasic Technology – III

- Smart impedance detection and compensation

Example:

- Deliver 200J to high impedance patient: Auto-increase the voltage and time properly
- Deliver 200J to low impedance patient: Auto-increase the current properly



■ Output energy

Wide range of selection for different types of patients

1,2,3,4,5,6,7,8,9,10,15,20,30,50,70

100,150,170,200,**300,360J**

“Successful cardioversion of atrial fibrillation using 360-Joules biphasic shock”

Vikas C.Jain, MD. and Kevin Wheelan, MD.

**The American Journal of Cardiology, Volume 90, Issue 3, Pages 331-332,
August 1, 2002.**

- **Energy charge**

Rapid and saving time for every rescue

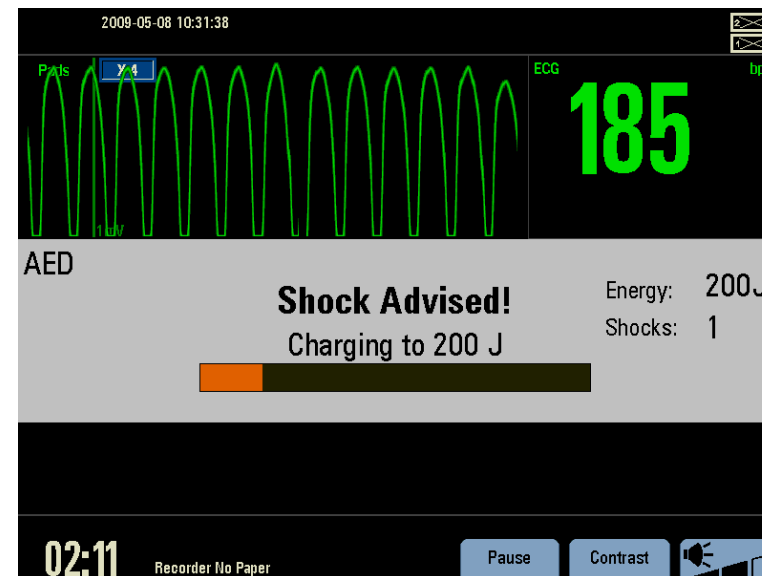
- **≤ 5 seconds to 200 Joules ***
- **≤ 8 seconds to 360 Joules ***

*** with a new, fully charged battery**



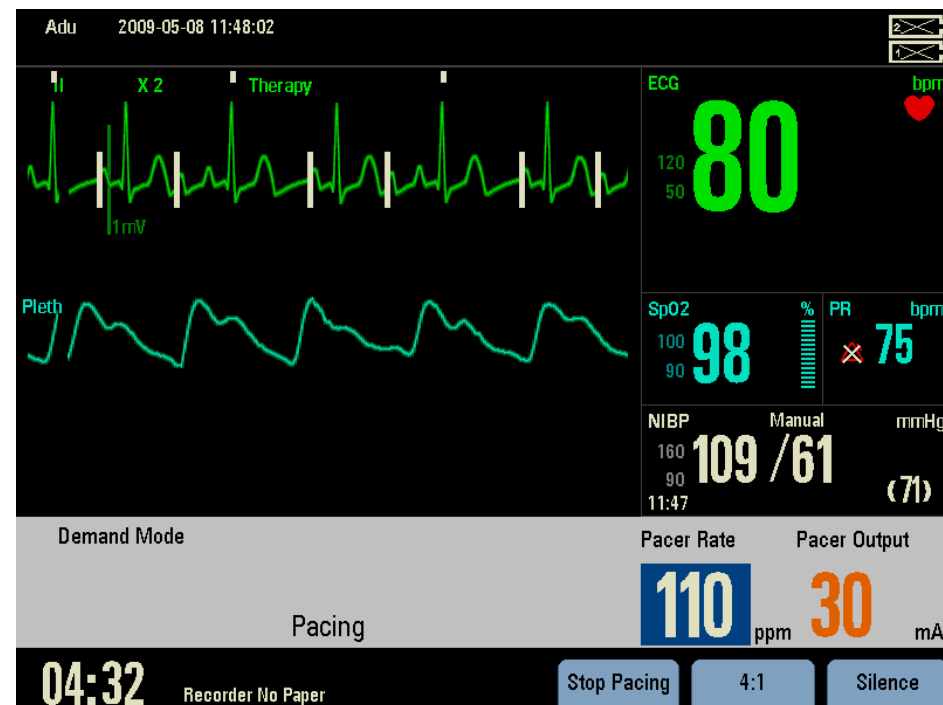
■ AED

- Automatic analysis of ECG rhythm to determine if a shock is advised.
- Audio and prompt text guide for AED process.
- Audio auto-recording available for keeping rescue moment as a possible evidence.
- Shock Joule series: 1, 2, 3, configurable
- Default configuration meets 2005 AHA Guidelines



■ Non-invasive pacing

- Demand mode and fixed mode selectable
- Rates and output current (mA) adjustable



Rich Monitoring functionality

Non-invasive parameters:

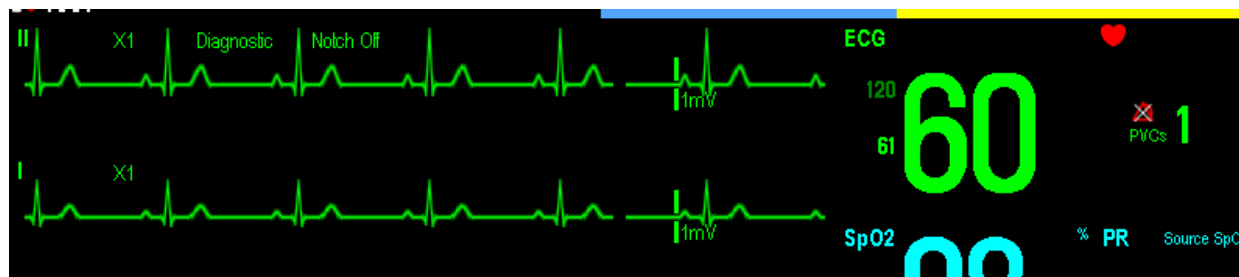
- ECG (3, 5, 12-lead)
- Respiration
- SpO2 (Mindray, Masimo, Nellcor)
- Non-invasive blood pressure
- 2-ch Temperature

Invasive parameters:

- 2-ch Invasive blood pressure
- EtCO2 (Sidestream, Microstream)

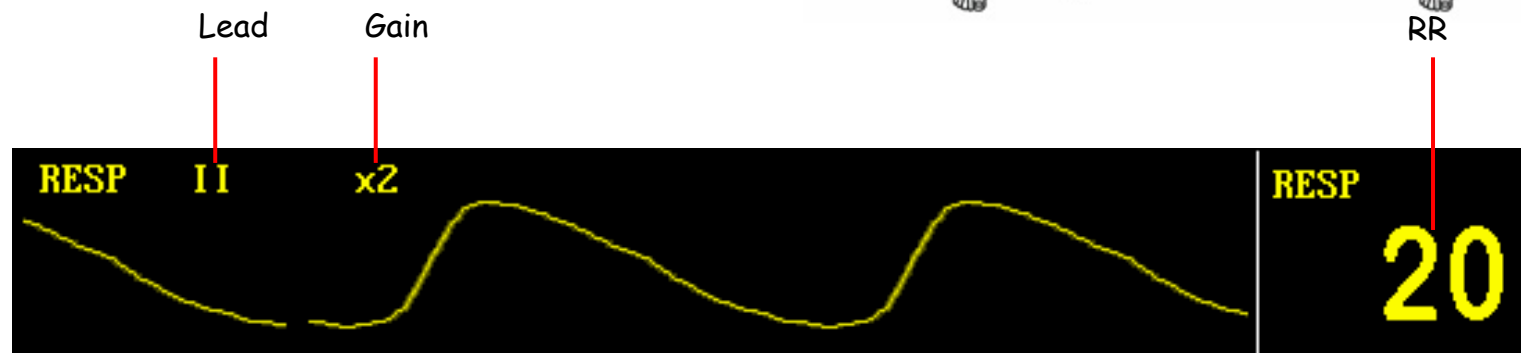
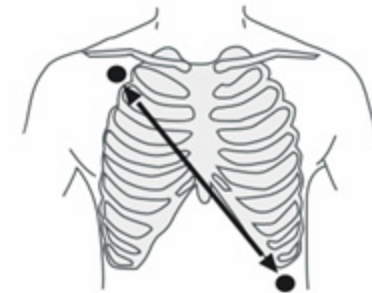
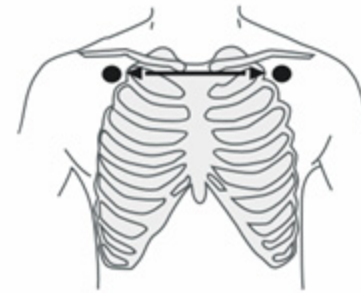
Features

- Mindray or Mortara algorithm
- 3, 5, 12-lead
- Display 1, 2 ECG waveforms
- Max. ECG Gain: $\times 4$, applicable for use in CCU
- ARR analysis
- Pace detection
- Monitor, surgery, diagnosis mode



Features

- I, II lead selectable
- Two detection mode: Manual, Auto
- Automatic apnea detection, apnea time can be set to 10s, 15s, 20s, 25s, 30s, 35s, 40s



Features

- Non-invasive, continuous
- Mindray, Masimo, Nellcor selectable
- Pitch tone: The monitor provides 22 pitch levels. The pitch rises as the SpO2 reading increases toward 100% and falls as it decreases.
- Simultaneously monitor SpO2 and NIBP on the same limb.



Features

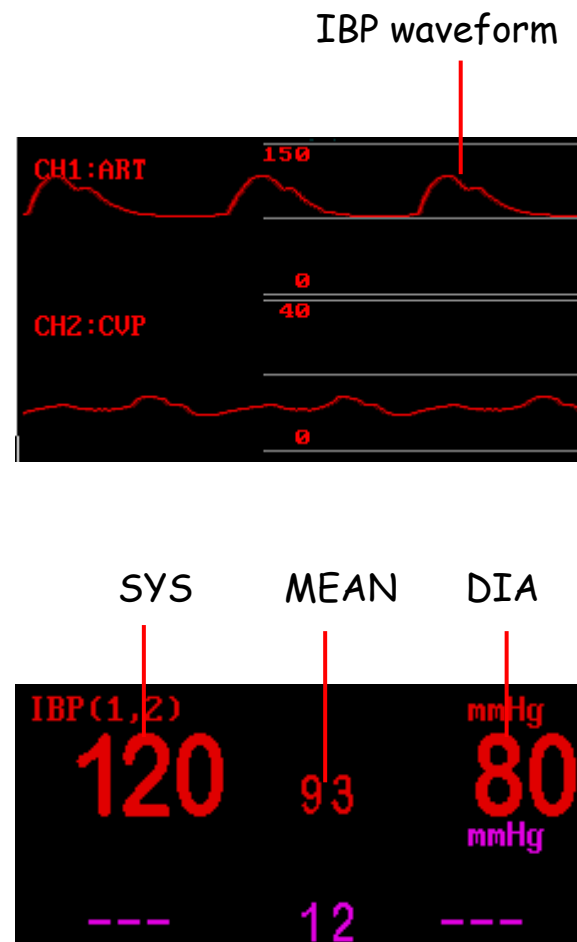
- Oscillometric method
- Mean, Diastolic, Systolic
- Mode: Auto, Manual, STAT
- Multi-Group display
- Assisting venous puncture
- Full ranged NIBP cuffs



NIBP	S	D	M	PR	Date	Time
	120	80	93	60	2007-11-04	10:40:27
	120	80	93	60	2007-11-04	10:40:07
	120	80	93	60	2007-11-04	10:39:49

Features

- 2-ch IBP
- **ART:** Arterial Blood Pressure
- **Ao:** Aortic pressure
- **PA:** Pulmonary Arterial Pressure
- **RAP:** Right Atria Pressure
- **LAP:** Left Atria Pressure
- **UAP:** Umbilical arterial pressure
- **FAP:** Femoral arterial pressure
- **ICP:** Intracranial Pressure
- **CVP:** Central Venous Pressure
- **UVP:** Umbilical arterial pressure
- **P1-P4:** Expand Pressure



Accessories

Mindray provides the following IBP accessories:

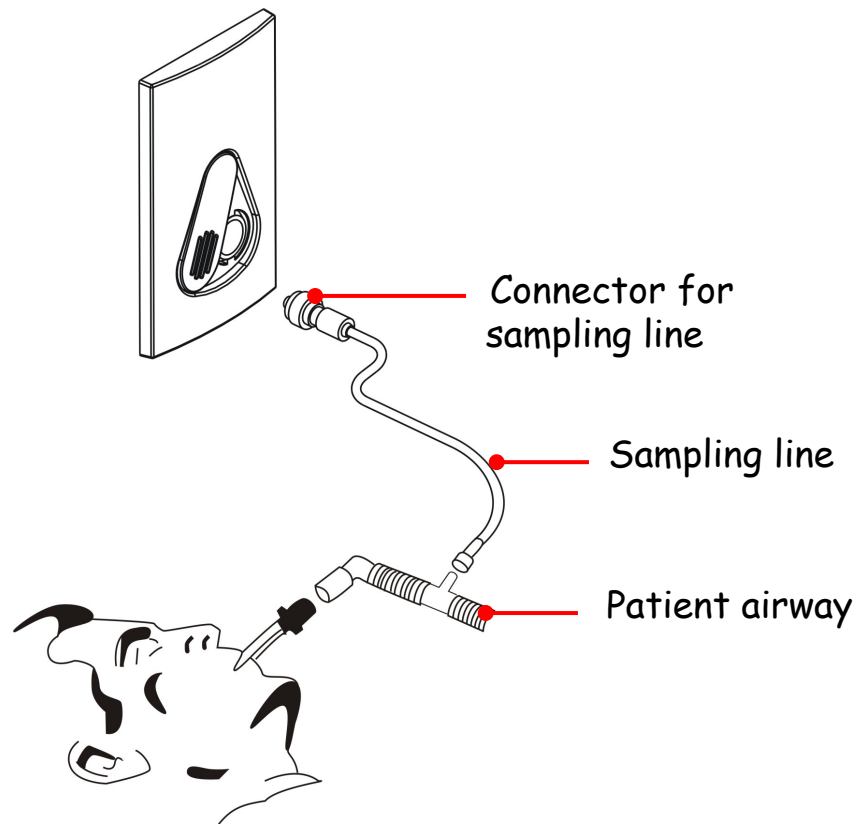
- BD
- Hospira

Compatible with the following IBP accessories:

- Smith Medical (Medex)
- Braun
- Memscap
- Utah
- Edwards

Note: Please refer to the operator's manual for specific models of these manufacturer's accessories, which are compatible with BeneView.

Operation



For non-intubated patients



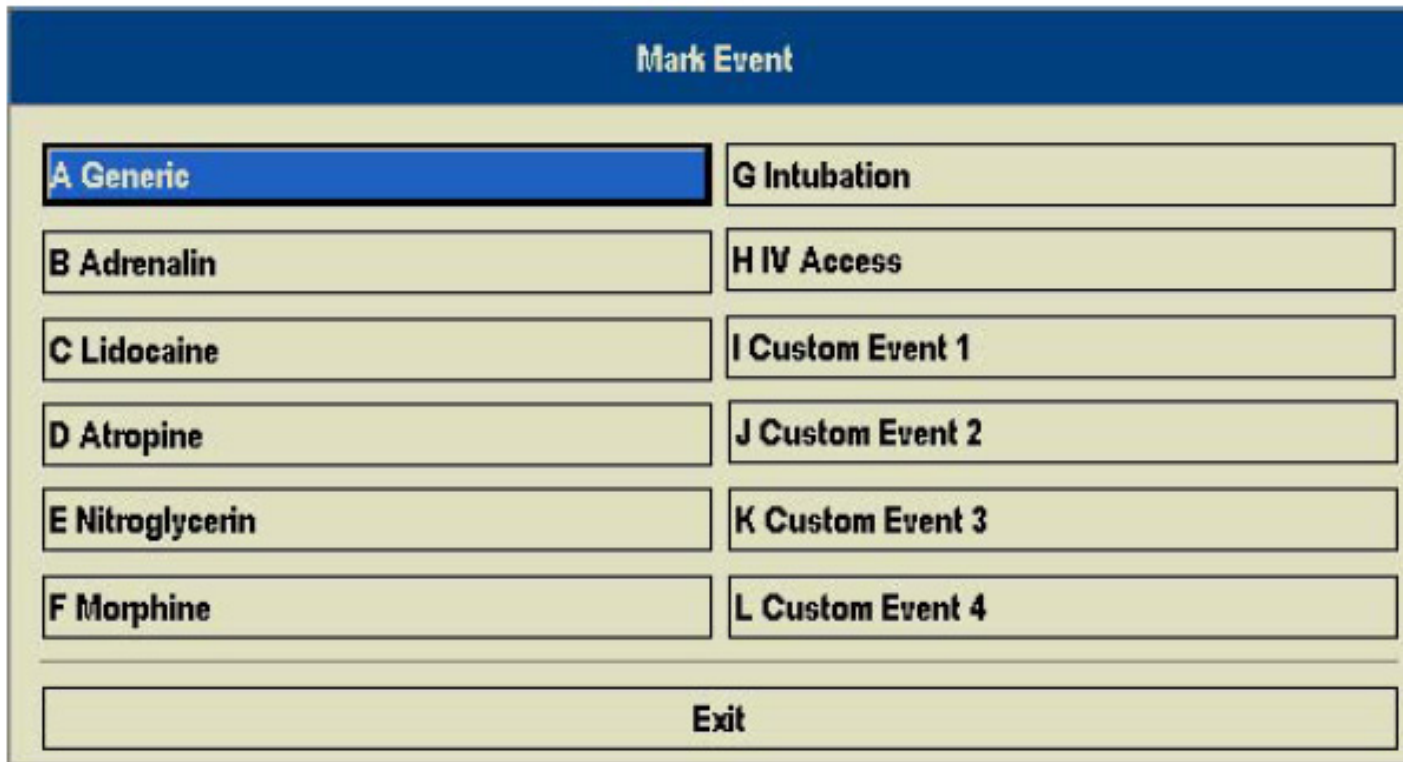
For intubated patients

Features

- Flexible for all patient types — Adult, Pediatric, Infant, Neonate
- Suitable for Intubated or Non-intubated patient
- Low sampling rate: 50 ml/min
- No compensation need to be set, ease to use
- Versatile for all environments — Critical Care, OR, EMS, ED, Sedation, Sleep Lab
- Abundant accessories options

Powerful Data Management

- **Marking Events**
 - 1000 events for each patient



The image shows a screenshot of a medical device's 'Mark Event' screen. The screen has a blue header bar with the text 'Mark Event'. Below the header, there is a grid of 12 buttons arranged in two columns and six rows. The first column contains buttons labeled 'A Generic', 'B Adrenalin', 'C Lidocaine', 'D Atropine', 'E Nitroglycerin', and 'F Morphine'. The second column contains buttons labeled 'G Intubation', 'H IV Access', 'I Custom Event 1', 'J Custom Event 2', 'K Custom Event 3', and 'L Custom Event 4'. The 'A Generic' button is highlighted with a blue background. At the bottom of the screen, there is a single wide button labeled 'Exit'.

Mark Event	
A Generic	G Intubation
B Adrenalin	H IV Access
C Lidocaine	I Custom Event 1
D Atropine	J Custom Event 2
E Nitroglycerin	K Custom Event 3
F Morphine	L Custom Event 4
Exit	

- Review
 - Review events

Review Events	
Time	Event
2007-01-15 23:10:13	Keyboard Comm Err
2007-01-15 23:08:57	117/71(92) mmHg
2007-01-15 23:08:24	SpO2 Sensor Off
2007-01-15 23:08:21	T2 Too Low,26.5 < 36.0 °C >>
2007-01-15 23:08:21	T1 Too Low,27.3 < 36.0 °C >>
2007-01-15 23:08:10	Device On
Event Type	All ▾
Index	2007-01-15 23:13:48
PrevNext ▾	
Record	
Previous Menu	
Exit	

- Review
 - 72 hours tabular trends

Tabular Trends						
Time	Event	PVCs /min	EtCO2 mmHg	awRR rpm	T1 °C	T2 °C
(15)23:16	G 23:15 ^H	--	0	0	27.4	26.5
(15)23:15	C 23:14	--	0	0	27.4	26.5
(15)23:14		--	1	1	27.4	26.5
(15)23:13		--	28	21	27.5	26.4
(15)23:12		--	31	25	27.4	26.4
(15)23:11		--	--	--	27.4	26.4

^

Prev/Next

▼

<

Left/Right

>

Interval

1 min

▼

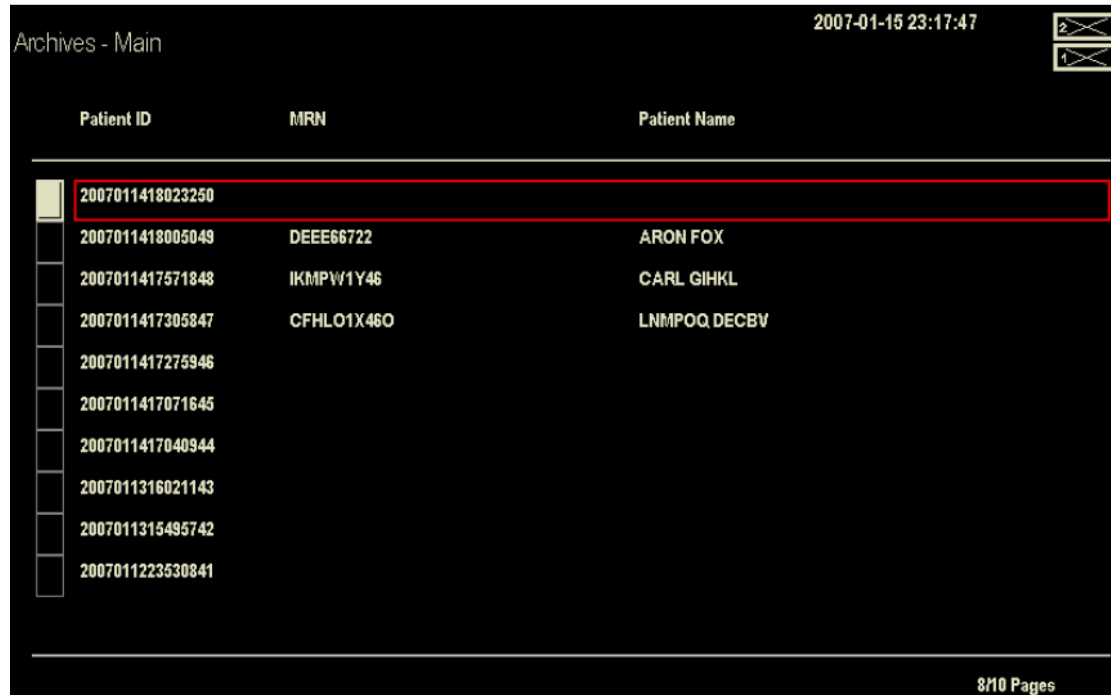
Record

Previous Menu

Exit

Patient Profiles

- 100 patient IDs



Archives - Main 2007-01-15 23:17:47

Patient ID	MRN	Patient Name
2007011418023250		
2007011418005049	DEEE66722	ARON FOX
2007011417571848	IKMPV1Y46	CARL GIHKL
2007011417305847	CFHLO1X46O	LNMPQO, DECBV
2007011417275946		
2007011417071645		
2007011417040944		
2007011316021143		
2007011315495742		
2007011223530841		

8/10 Pages

■ Data Storage Summary (saved in fixed-in CF card)

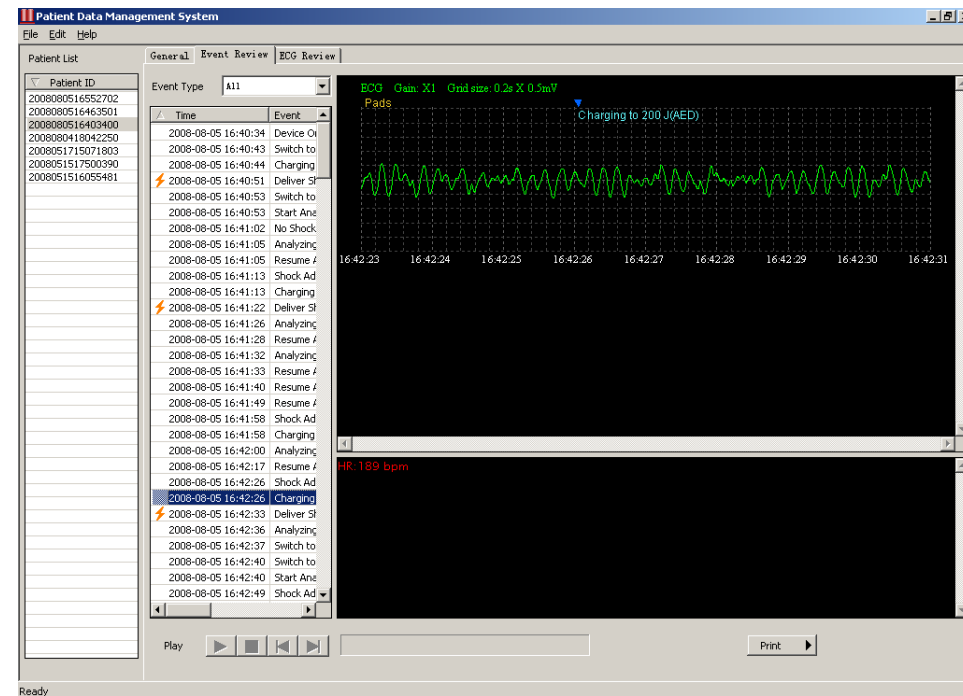
- 100 patients' profiles
- 1000 events for each patient
- 24h consecutive ECG waveform storage
- 180 minutes voice recording
- 72h tabular trends

Transfer via flash disk to PC



■ Data management software

- To review patient data, events and ECG waveforms
- To edit the patient data on a PC
- To print out patient data.



Selling Points Summary

- **Compact, durable, and ergonomic design suitable for emergency use**
- **Degree of protection against dust and water : IP34 , ready to be used in different environments**
- **Biphasic Technology, more effective but less energy to protect heart**
- **1-2-3 step guidance for fast and safety defibrillation**
- **Wide range of output energy (1~360J) suitable for different patients**
- **Rapid charging time saving time for every rescue**

- **(800x600) with up to 4 traces, easy to read more information
8.4“ TFT large display**
- **Plenty of monitoring choices: ECG, RESP, SpO2, NIBP, 2-Temp,
2- IBP, CO2, perfect for ambulance transfer**
- **Large power capacity with 2 Li-ion batteries**
 - 10 h' continuous monitoring
 - 200 shocks
 - 6 h' pacing and ECG monitoring
- **Carry case with enhanced durability perfect for out-hospital use**
- **Quick buttons for user to access common used functions**

- **Powerful data storage, without concern about losing information**
 - 100 patients' profiles
 - 1000 events for each patient
 - 24h consecutive ECG waveform storage
 - 180 minutes voice recording
 - 72h tabular trends

- **Easily output patient data through plug-and-play USB disk**

- **Centralized alarm and configuration settings**

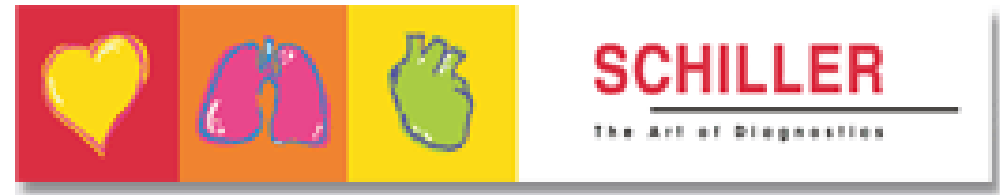
Competitors

Main Players

mindray



PHILIPS

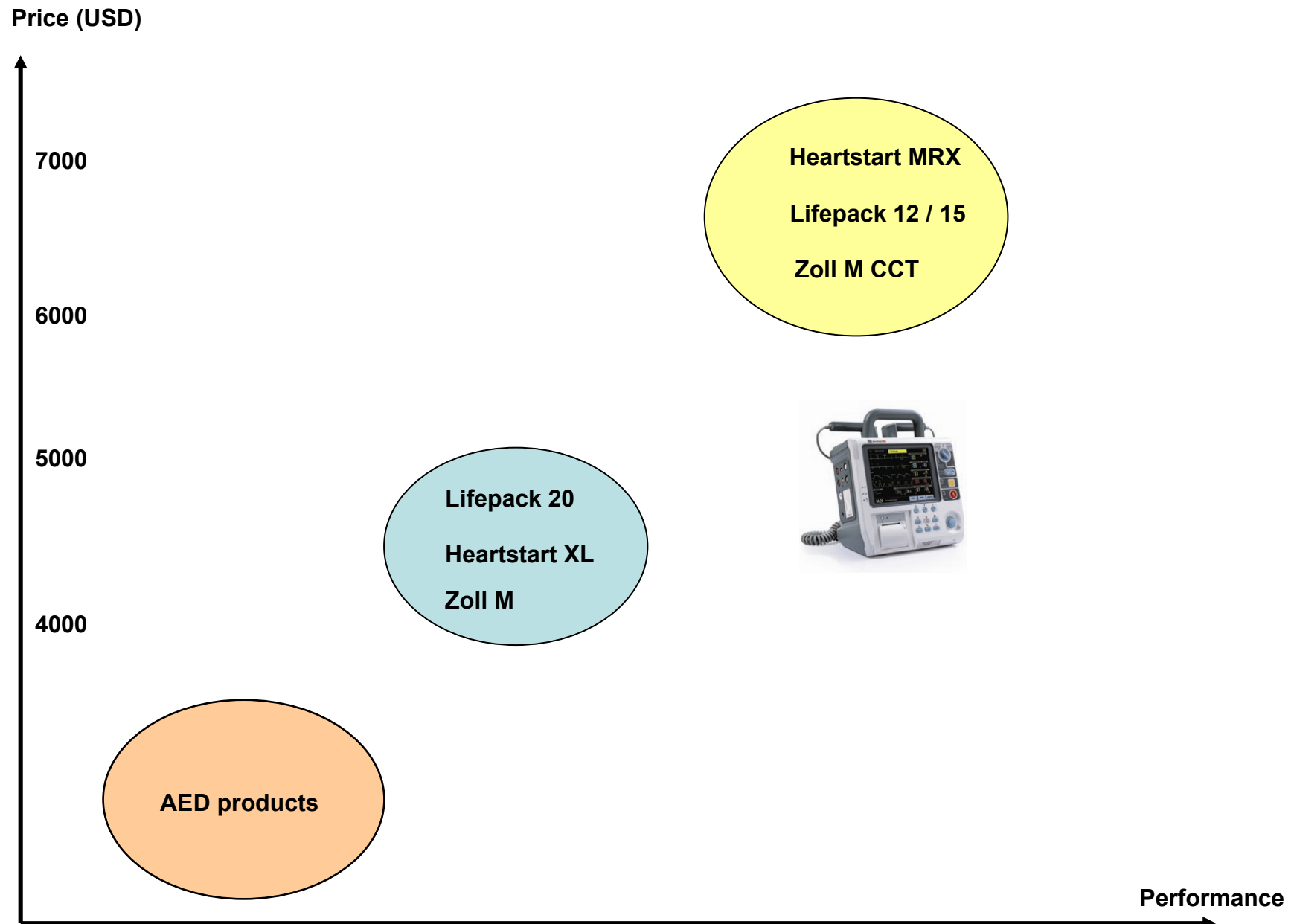


ZOLL

WelchAllyn®

NIHON KOHDEN





- **Manual defib/AED, monitoring and pacer**
- **ADAPTIV™ Biphasic technology**
- **Masimo Rainbow technology with SpCO and SpMet**
- **SpO2, 12 ECG, EtCO2, NIBP and IBP**
- **8.4" Color LCD display**
- **100mm recorder**
- **Max. 360J energy selection**
- **Lifenet™ system for communicating between unit to hospital via cell phone**

Positioning: EMS, Ambulance



- **Manual defib/AED, monitoring and pacer**
- **ADAPTIV™ Biphasic technology**
- **SpO2, 12 ECG, EtCO2, NIBP and IBP**
- **6.9 black & white LCD or 8.1" amber and black EL display**
- **50mm/100mm recorder (option)**
- **Max. 360J energy selection**
- **Lifenet™ system for communicating between unit to hospital via cell phone**

Positioning: EMS, Ambulance



- Manual defib/AED, monitoring and pacer
- ADAPTIV™ Biphasic technology
- 3/5-lead ECG, SpO2
- 5.6" color LCD, 2 traces
- Max. 360J energy selection
- 50mm recorder



Positioning: ICU, CCU, General ward, OR, ER

Mindray vs Physio-Control

Item	BeneHeart D6	Lifepak 12	Lifepak 20
Display	8.4" TFT ,800 x 600, 4 traces	6.9" Mono LCD /8.1" EL, 640×480, 3 traces	5.6" LCD, 320 x 240, 2 traces
Weight	Main unit <6.6 kg 1 battery: 0.75 kg external paddles: 0.83 kg	Main unit 6.6kg, With external paddles 7.5kg	Main unit(w/ paceing+ SpO2) 5.58 kg, w/ external paddles 6.66kg
Defibrillation wave	Biphasic	Monophase/Bipahsic	Biphasic
Output Energy	1—360 J	2—360J	2—360J
Charge time	200J < 5s,360J < 8s	360J < 10s	200J < 4s,360J < 7s
Non-invasive Pace	option	option	option
Parameters	3/5/12ECG/Resp/Mindray、 Masimo、 Nellcor SpO2/2-TEMP / NIBP /Sidestream、 Microstream EtCO2 /2-IBP	3/5/12 ECG /Masimo,Nellcor SpO2 /NIBP / Microstream EtCO2/2-IBP	3/5 ECG/ Masimo SpO2
Recorder	50 mm	50 mm or 100 mm	50 mm

Mindray vs Physio-Control

	BeneHeart D6	Lifepak 12	Lifepak 20
Data storage	Build-in 1GB CF card, 1000 events , 24h' ECG waveform, Voice recording 180 m'(max 60m' for single patient use), Patient archive 512 groups	Two patients with 100 events for each, 45min ECG waveform storage	Two patients with 100 events for each
Battery	2 Li-ion batteries, charge time <3h 1 Li-ion battery, 5h' for monitoring , 100 times for Defibrillation in 360J, 3h' for pacing	Lead acid battery charge time: min 1.5h 2 batteries Max 220 min for monitoring, 160 times for defibrillation in 360J, 210 min for pacing and monitoring	1 Ni-H battery, charge time <2h. 1 battery Max 135min for monitoring, 90 times for defibrillation in 360J, 70min for pacing and monitoring
Self-test	Yes	Yes	Yes
Water-proof	IPX4	IPX4	IPX1

- Manual defib/AED, monitoring and pacer
- SMART Biphasic™ waveform
- 8.4" TFT color LCD, 4 traces
- 3/5/12-lead ECG, SpO2, NIBP, EtCO2
- Q-CPR Measurement and feedback
- AC and DC power modules
- 50mm/75mm recorder



Positioning: EMS, Ambulance

- **Manual defib/AED, monitoring and pacer**
- **SMART BiphasicTM waveform**
- **3/5-lead ECG, SpO₂**
- **50mm recorder**
- **5.5" EL display**



Positioning: ICU, CCU, General ward, OR, ER

Mindray vs Philips

	BeneHeart D6	HeartStart XL	HeartStart MRx
Display	8.4" TFT ,800 x 600, 4 traces	5.5"TFT, 320 x 240	8.4" TFT, 640 x 480, 4 trace
Weight	Main unit <6.6 kg 1 battery: 0.75 kg external paddles: 0.83 kg	6.0 kg (with battery and recorder)	Main unit+ 1 battery+ Pads + cable : 6kg External paddle: 1.1kg
Defibrillation wave	Biphasic	Biphasic	Biphasic
Output Energy	1—360 J	2—200J	1—200J
Charge time	200J < 5s, 360J < 8s	200J < 3s	200J < 5s
Non-invasive Pace	option	option	option
Parameters	3/5/12 ECG/Resp/Mindray、Masimo、 Nellcor SpO2/2-TEMP / NIBP /Sidestream、 Microstream EtCO2 /2-IBP	3/5 ECG/fast SpO2/Nellcor SpO2	3/5/12 ECG/FAST SpO2 /Nellcor SpO2/1-TEMP/NIBP/Microstream EtCO2/2-IBP
Recorder	50 mm	50 mm	50mm or 75mm

	BeneHeart D6	HeartStart XL	HeartStart MRx
Data storage	Build-in 1GB CF card,1000 events, 24h' ECG waveform, Voice recording 180 m'(max 60m' for single patient use), Patient archive 512 groups	300 events, 50 group of ECG waveform, (Option) 2 h' memory card	12h' ECG waveform and events, 55 "event summaries" CF card: 60 "even summary" or 240 Mb patient data
Battery	2 Li-ion batteries, charge time <3h. 1 Li-ion battery, 5h' for monitoring, 100 shocks in 360J, 3h' for pacing	1 Lead acid battery, 14.5h fully charge, 3h for 90% charge; 1 battery for 50 shocks in 200 J,100min ECG monitoring, 75min for monitoring and pacing	2 Li-ion battery, charge time 3h, 1 battery for 50 shocks in 200J, 5h for monitoring, 3.5h for monitoring and pacing
Self-test	Yes	Yes	Hourly, daily, weekly
Water-proof	IPX4	Meets IEC 60601-2-4, IPX0	M3536A: IPX4 M3535A: Meets IEC 60601-2-4

- **6.5" color LCD, 3 traces, 1 VGA for extended display**
- **Rectilinear Biphasic Technology**
- **Max energy : 200J**
- **3/5/12-lead ECG, SpO2, NIBP, EtCO2, TEMP, IBP**
- **90mm recorder**



Positioning: EMS, Ambulance

- **5.6" EL, 2 traces**
- **Monophasic or Rectilinear Biphasic Technology**
- **Monophasic Max.360J, Biphasic Max.200J**
- **3/5/12-lead ECG, SpO2, NIBP, EtCO2**
- **80mm/90mm recorder**



Positioning: EMS, Ambulance,
ER, ICU, CCU, OR

	BeneHeart D6	M Series	M Series CCT
Display	8.4" TFT ,800 x 600, 4 traces	5.6" EL, 2 traces	6.5"LCD, 640 x 480, 3 traces
Weight	Main unit <6.6 kg 1 battery: 0.75 kg external paddles: 0.83 kg	Main unit 5.23 kg (with battery and cable), With external paddles: 6.14kg	Main unit 7.82 kg (with battery and cable), With external paddles 8.4 kg
Defibrillation wave	Biphasic	Monophasic /Biphasic	Biphasic
Output Energy	1—360 J	Monophasic: 1—360 J Biphasic:1—200J	1—200J
Charge time	200J < 5s, 360J < 8s	360J<7s	200J<6s
Non-invasive Pace	option	option	option
Parameters	3/5/12 ECG/Resp/Mindray、Masimo、 Nellcor SpO2/2-TEMP / NIBP /Sidestream、 Microstream EtCO2 /2-IBP	3/5/12 ECG/Masimo SpO2 /NIBP/Novametrix mainstream, sidestream EtCO2	3/5/GE Marquette 12SL™ ECG/Masimo/NIBP/2-TEMP/ Novametrix mainstream、 sidestream EtCO2/2-IBP
Recorder	50 mm	90 mm	90 mm

	BeneHeart D6	M Series	M Series CCT
Data storage	Build-in 1GB CF card, 1000 events, 24h' ECG waveform, Voice recording 180 m'(max 60m' for single patient use), Patient archive 512 groups	1 — 16Mb memory card, 4Mb card for 2h events, 38min for events and Audio recording	1 — 16Mb memory card, 4Mb card for 2h events, 38min for events and Audio recording
Battery	2 Li-ion batteries, charge time <3h ◦ 1 Li-ion battery, 5h' for monitoring, 100 shocks in 360J, 3h' for pacing	1 lead acid, charge time 4h, 35 shocks in 360J, 3h ECG monitoring, 2.5h ECG monitoring and pacing	1 lead acid, charge time 7.2h, 60shocks in 200J, 2.5h monitoring, 2.3h ECG monitoring and pacing, 1.5h monitoring and pacing
Self-test	Yes	/	/
Water-proof	IPX4	IPX4	IPX3

Thank you!