# Life Scope VS

# Bedside Monitor

## BSM-3000 series

*All for specialists*

# All for specialist

## Common issues at acute care environment

- Fluid optimization
- Sepsis
- Respiratory-related harms

## Nihon Kohden provides the solution

### Intelligible fluid optimization

Fluid optimization is essential for reducing the risk of complications. Nihon Kohden's innovative esCCO gives accurate flow information with a very simply and totally non-invasive process.

### Improving the mortality rate in sepsis

Sepsis is common cause of death in ICU. Infusion solution within 6 hours is essential from sever sepsis or septic shock. Blood pressure and CVP target graphs can support therapy according to the guidelines for initial resuscitation of sever sepsis and septic shock.

### Save the patients from respiratory-related harms

Respiratory-related claims may cause irreversible brain damage or death. $ETCO_2$ is the most effective parameter to detect the trouble in breathing or ventilator.

Nihon Kohden innovative mainstream $CO_2$ sensor, cap-ONE provides reliable $ETCO_2$ monitoring for both intubated/non-intubated patients.

# Intelligible fluid optimization

## Fluid optimization

Too low fluid or too much fluid, both increase patient risk of complications. The best fluid volume that fits to each patient is necessary.
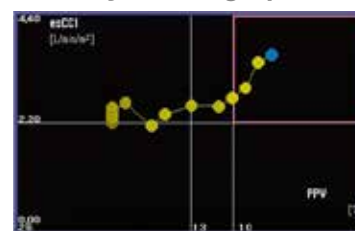
## Visualizing volumetric information

Nihon Kohden's hemodynamics graph provides a more intuitive approach to diagnostic and therapeutic decision making in hemodynamic management. This new tool provides a visual Frank-Starling curve to help the clinician easily see the direction and trend of hemodynamics change.

**Frank-Starling curve**
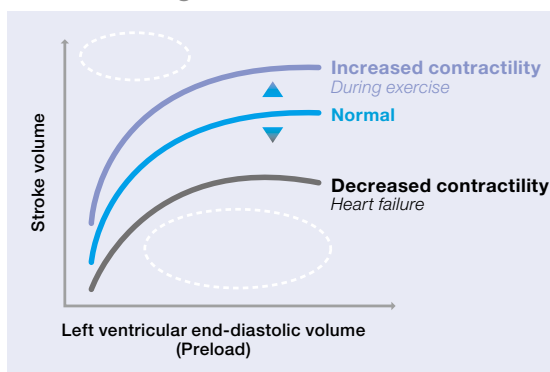


**Hemodynamics graph**



## PPV/SPV Less-invasive preload indicator

PPV (Pulse Pressure Variability) and SPV (Systolic Pressure Variability) show intravascular volume. This is a useful indicator in guiding fluid therapy for patients on mechanical ventilation.



## Redefining quality of care with non-invasive hemodynamics monitoring

Nihon Kohden is redefining Quality of Care with new non-invasive technologies like PWTT (pulse wave transit time) and esCCO (estimated continuous cardiac output) by introducing volumetric information to all care levels.

esCCO provides real-time, continuous non-invasive cardiac output measurement alongside the familiar vital sign parameters of ECG and $SpO_2$.

esCCO is very cost-saving solution because it has no additional running costs or accessories.
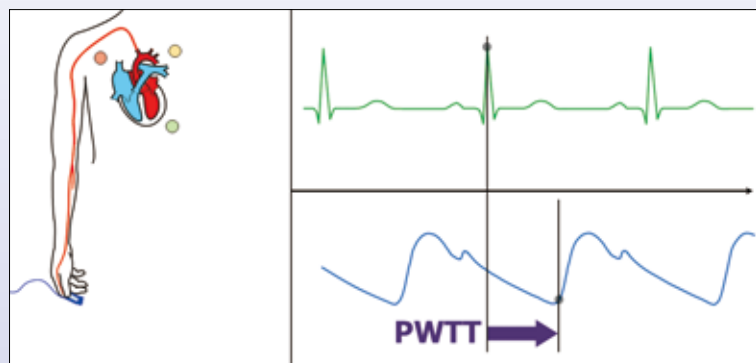


Pulse Wave Transit Time derived from ECG and pulse oximetry signal

# Improving the mortality rate in sepsis

Sepsis is an infection caused by bacteria invading the body and can be widespread in the bloodstream (often called "septicemia" or "blood poisoning").

Sepsis is a medical emergency just like a heart attack because there is an interruption of oxygen and nutrients to the tissues including the vital organs such as the brain, intestines, liver, kidneys and lungs.

Sepsis is common cause of death in ICU. Infusion solution within 6 hours is essential from sever sepsis or septic shock.

## Hemodynamics graph for sepsis treatment

Blood pressure and CVP (Central Venus Pressure) target graphs can support therapy according to the guidelines for initial resuscitation of sever sepsis and septic shock.



CVP/MAP initial resuscitation protocol in severe sepsis and septic shock
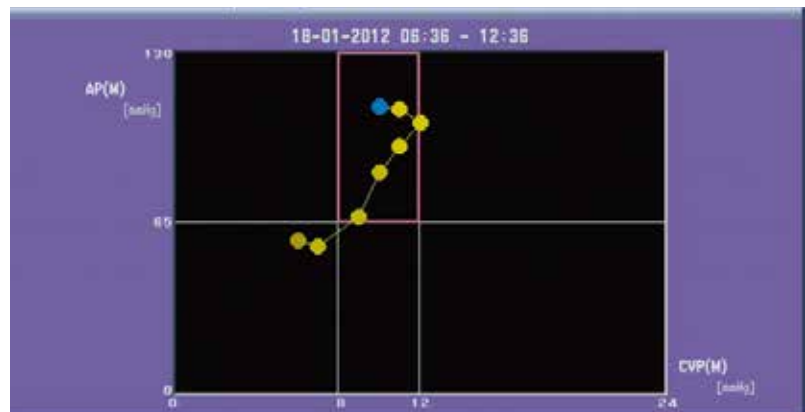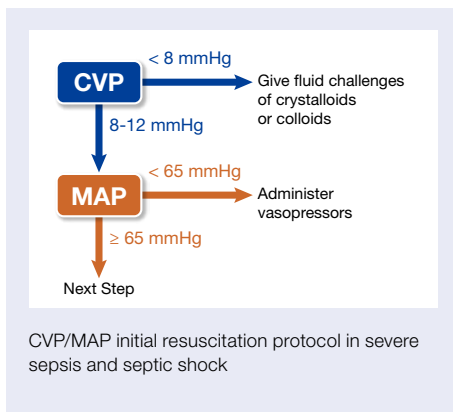


## CVP_ET

Respiration affects intrapleural pressure and CVP value becomes unstable. Nihon Kohden original technology CVP_ET used the $CO_2$ signals to calculate the end tidal mean CVP. CVP_ET provides stable and physiologically-correct value of CVP.
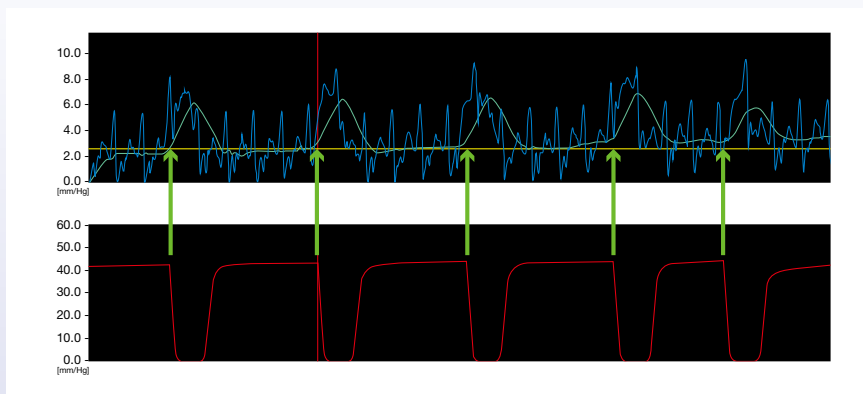
# Save the patients from respiratory-related harms

## ETCO$_2$ measuring for safer monitoring

Respiratory-related claims may cause irreversible brain damage or death.

Guidelines recommend to measure $CO_2$ for all patients receiving deep sedation and for patients whose ventilation cannot be directly observed during moderate sedation. Nihon Kohden innovative main stream $CO_2$ sensor, cap-ONE, realizes ETCO$_2$ monitoring for both intubated/non-intubated patients.

$CO_2$ monitoring is also effective for the patients prescribed Opioid (Pain relief medication), especially with oxygen administration. Impedance respiration may miss the arrest of breathing.
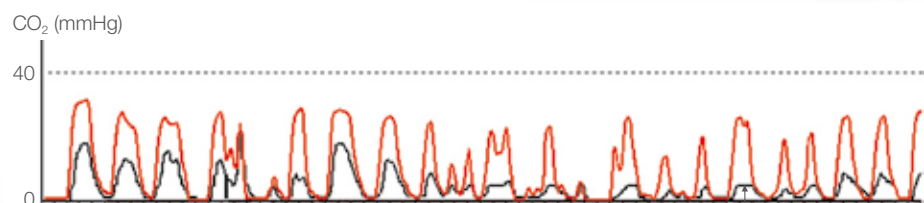
## cap-ONE



**Non-intubated**



This unique design adapter catches both nasal/oral expiration.

### Durable and reliable CO$_2$ sensor

- Fast response with no lag time
- No warm-up time
- No heater or motor
- No sampling tube
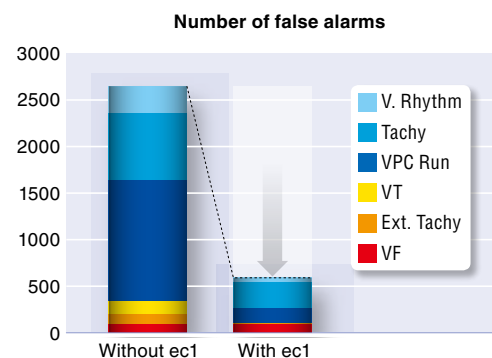- Compact and lightweight



**Intubated**

CO$_2$ (mmHg)

40

0

*Comparison of **mainstream** (cap-ONE) and sidestream*
Sidestream causes false alarms



## High quality monitoring increases accuracy

### High accurate ec1 arrhythmia analysis

If there are too many false alarms, you may miss the critical situation of patients. Nihon Kohden's ec1 arrhythmia analysis provides superior elimination of false alarms. ec1 has been evaluated arrhythmia databases as well as Nihon Kohden's ECG database, with a result of 80% reduction of false alarms.
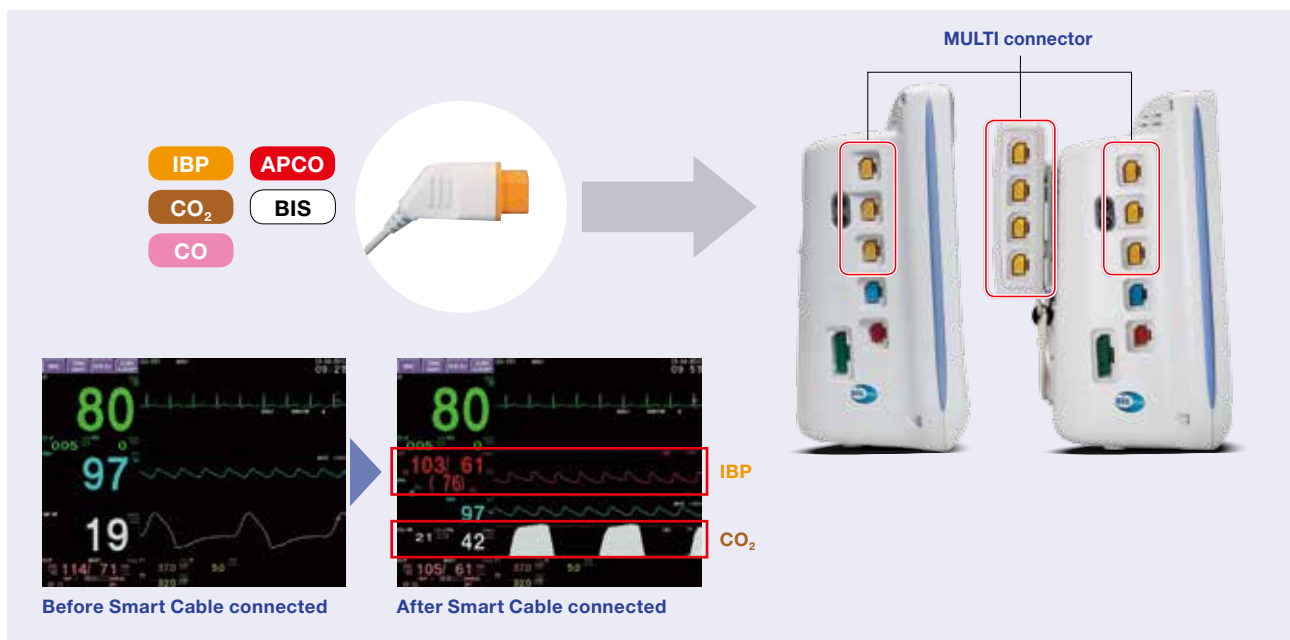
**ec1** *Arrhythmia Analysis*

**Number of false alarms**



| | |
|---|---|
| ☐ | V. Rhythm |
| ☐ | Tachy |
| ☐ | VPC Run |
| ☐ | VT |
| ☐ | Ext. Tachy |
| ☐ | VF |

Without ec1    With ec1

# Cutting edge technologies

## Smart Cable system - new modular technology

**Smart Cable system supported**
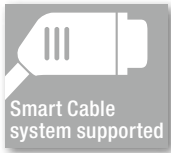
When you plug a Smart Cable into a MULTI connector, it automatically detects the type of parameter and starts measuring. The combination of fixed basic parameters and flexible MULTI connector parameters allows flexible monitoring for different patient conditions. You get complete modular flexibility at a significantly reduced cost and without the inconvenience associated with traditional modular systems.

**MULTI connector**

IBP   APCO
$CO_2$   BIS
CO

**IBP**

$CO_2$

**Before Smart Cable connected**     **After Smart Cable connected**

## Smart data review

- Up to 72 hours of 5 selected full disclosure waveforms

- Time is synchronized across all trend screens

- Trend table and trend graph can be customized for each patient condition

- Vital sign trend table, NIBP trend table, trend graph, arrhythmia recall, full disclosure, and alarm history provide comprehensive review

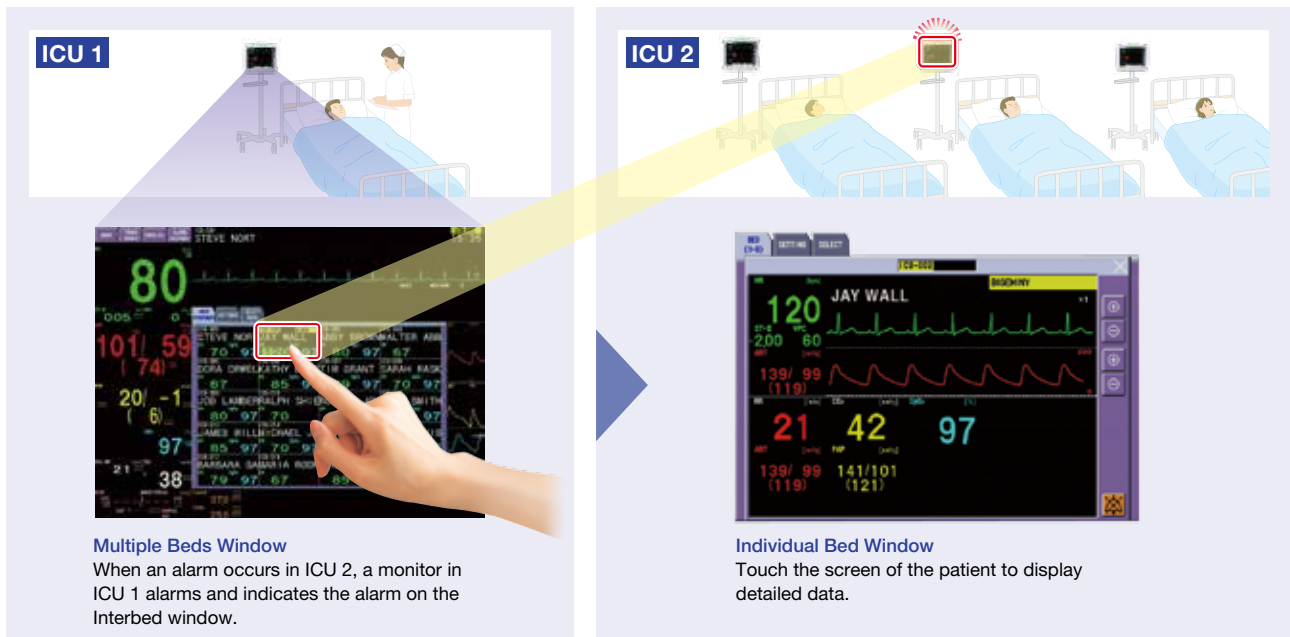**Full disclosure**     **Trend table**

**Trend graph**     **Arrhythmia recall**

# Monitoring system network

## Interbed monitoring

You can use any bedside monitor to check the vital information and alarm status of another monitor in the network, even if there is no central monitor.

Numeric data for 20 patients or numeric data and 2 waveforms for one patient can be displayed on the Interbed screen.

**Multiple Beds Window**
When an alarm occurs in ICU 2, a monitor in ICU 1 alarms and indicates the alarm on the Interbed window.

**Individual Bed Window**
Touch the screen of the patient to display detailed data.

## ViTrac™

Nihon Kohden's Unified Gateway is a client/server based application which provides a secure method for monitoring and viewing a wide range of patient data from Nihon Kohden monitors and devices. Patient data can be viewed in near real-time on an Apple's mobile iOS device within the hospital network or remotely via a VPN connection.

Apple is a trademark of Apple Inc. iOS is a trademark of Cisco.

ViTrac provides medical personnel with monitoring information on multiple patients, any place any time.

## HL7 Gateway

An HL7 gateway connects the LS-NET monitor network to the hospital or clinical information system (HIS, CIS). Vital sign data, alarm history, arrhythmia and ST recall, 12-lead analysis reports, and waveforms* in the bedside monitor can be transferred using HL7 protocol.

*Some limitations apply to transferring waveforms.

# External units

**CO$_2$ unit**
AG-400RK

**Multigas unit**
GF-210R

**Multigas/flow unit**
GF-220R

**Neuro unit**
AE-918P

**Ventilator**
- Dräger
- Puritan Bennett
- MAQUET
- Hamilton
- GE
- Newport Medical
- Air Liquide
- ResMed
- Metran
- Care Fusion
- Heinen+Löwenstein

**BIS processor**
QE-910P

**Regional saturation of oxygen (rSO$_2$)**
- Covidien
  INVOS 5100C

**BSM-3000 series**

**Anesthesia workstation**
- Dräger
- MAQUET
- Heinen+Löwenstein
- GE
- Air Liquide

**TOF-Watch SX**

**Transcutaneous monitor (tcpO$_2$ /tcpCO$_2$)**
- Radiometer
  MicroGas 7650 rapid, TCM4, TCM40, TCM Combi M

**CCO monitors**
- Edwards Lifesciences
  Vigilance, Vigilance II, Vigileo
- ICU Medical
  Q2, Q2 Plus, Q-Vue
- PULSON Medical Systems
  PiCCO monitor

For the complete list of device, please contact your Nihon Kohden representatives

# Major options

Input unit (MULTI connector)
AA-372P / 374P*
AA-372P (2 MULTI connector)
AA-374P (4 MULTI connector)

* To use optional AA-372P/374P,QI-374P, interface
  is required.

ZS-900PK transmitter
can transmit data to the
central monitor wirelessly.

BSM-3562 with QI-320PA
LAN transmitter

Mobile monitoring is available
with the wireless LAN* option.

* You must confirm the radio
  communication regulations with your
  country's distributor.