

ANZAI

since 1976

Respiratory Gating System

AZ-733VI



Specifications



Dimension

Sensor Port W:260 × D:230 × H:126mm

Weight

Approx. 5.0kg

Power Supply

AC100-240V, 50/60Hz 200VA

Configuration

Sensor Port

Relay Box

Gate Disable Switch

Personal Computer

Respiratory Sensor Load Cell (Standard, Deep)

Load Cell Fixing Belt (LL,L,M,S)

Load Cell Calibrator

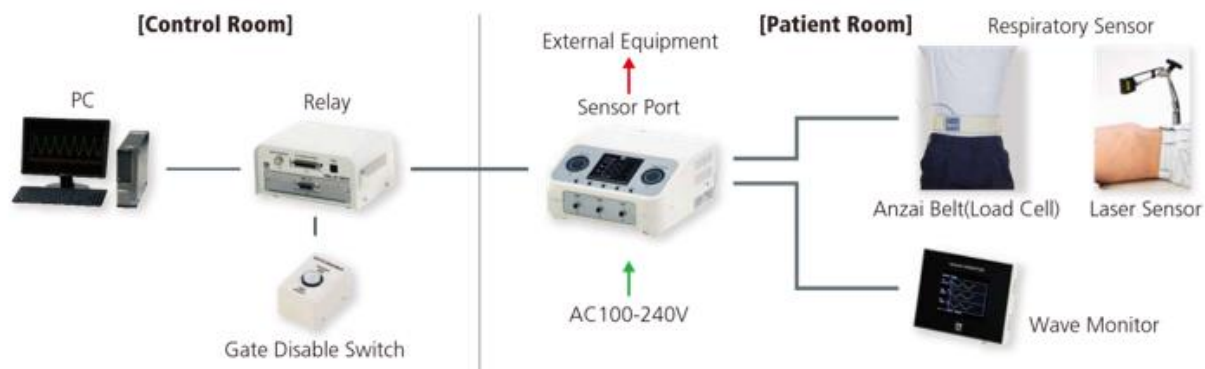
Sets of Cables

Options

Laser Sensor & Fixing Arm

Visual Coaching Device

Layout



Options

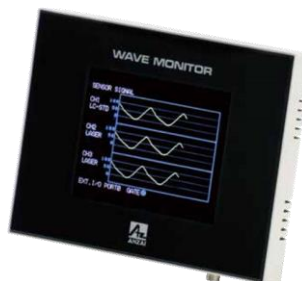


Laser Sensor 120mm

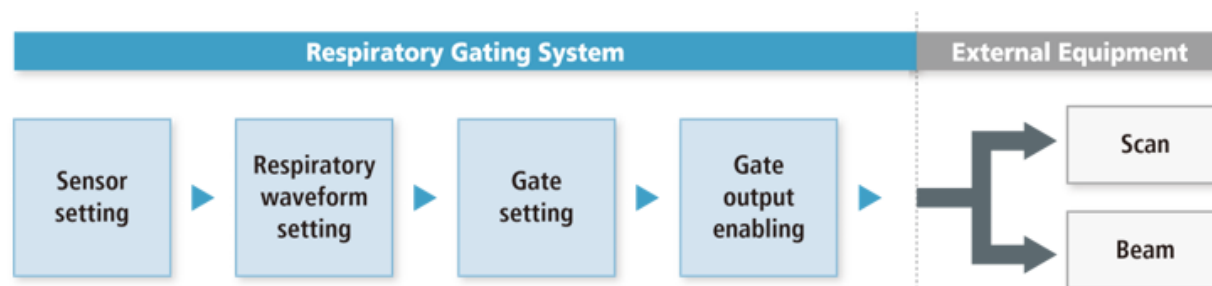
Distance measuring : 120mm
 Range : ± 60 mm
 Class: Class II
 Size : W:67 x D:22 x H:57mm

Wave Monitor

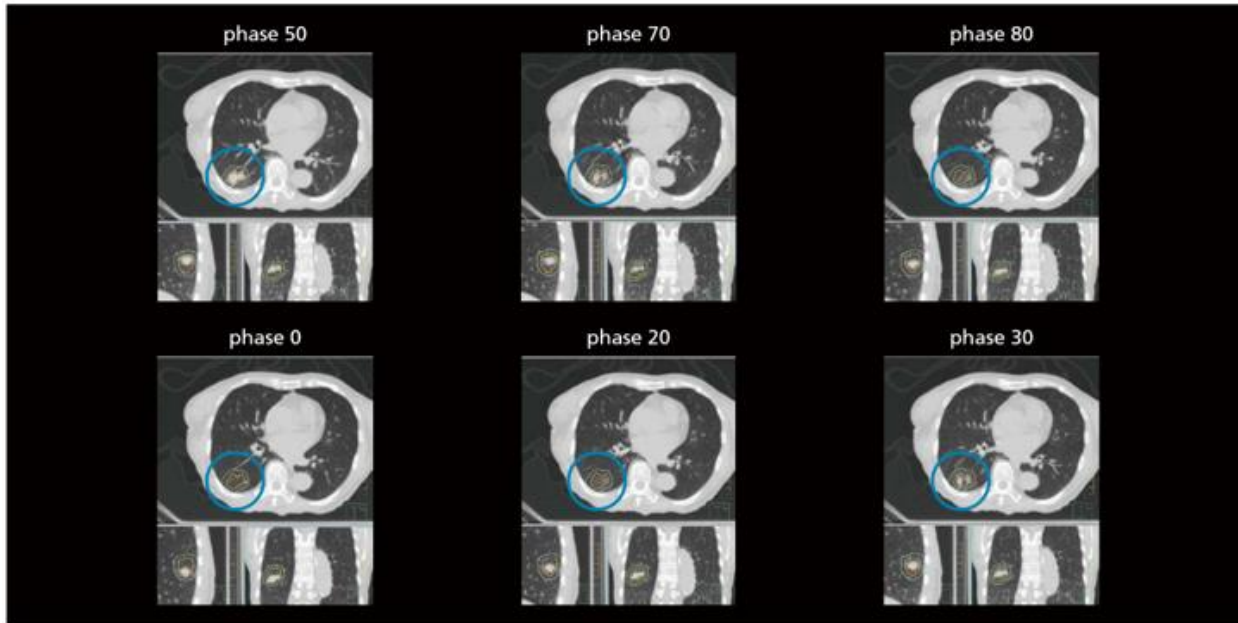
LCD : 5.7inch TFT color
 Size: W:206 x D:36 x H:150mm



Workflow

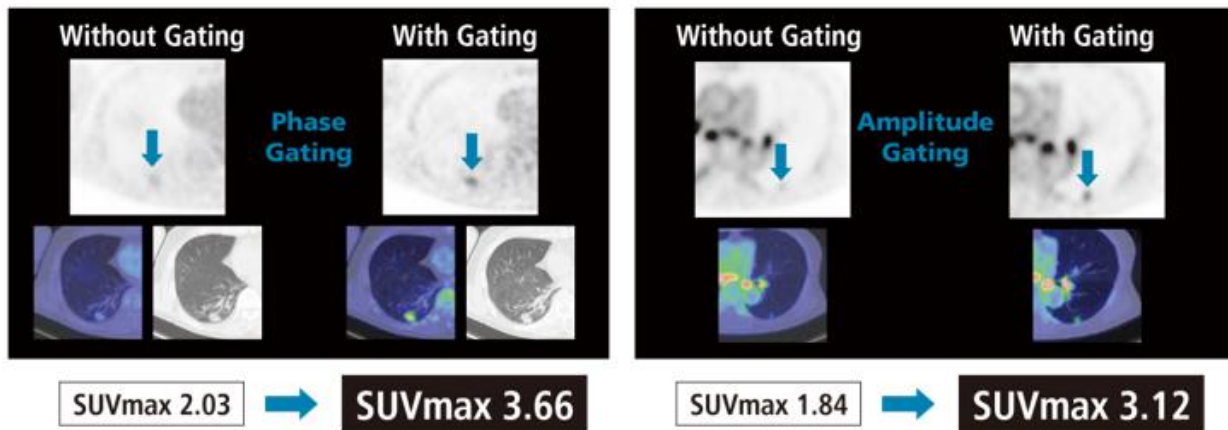


4DCT Example of Treatment Planning using 4DCT



By courtesy of The University Hospital of Tokyo

PET CT



By courtesy of Kyushu University Hospital

Features

High Performance

Respiratory sensors selectable in accordance to modality.

There are two types of high precision Respiratory Sensor available. They are selectable in accordance to the modality to be used with.

Load Cell Sensor (Patient Contact Type)

This sensor detects pressure by using strain gauge bridge circuit. The pressure detecting part of the sensor is used with a belt, and the motion of the body surface (pressure change at the abdomen) is displayed as a respiratory waveform.



There are two load cell sensors which are selected based on the motion of the abdomen. For normal breathing, use “STANDARD”. For a larger breath motion, use “DEEP”.

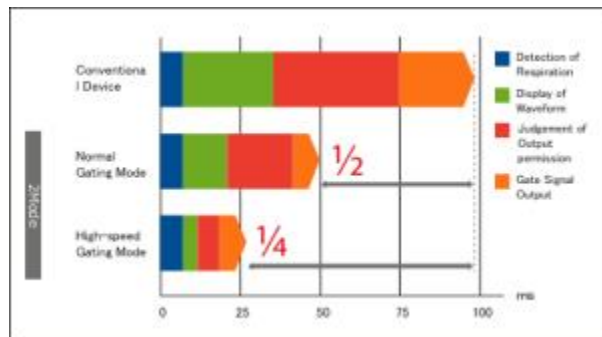
PET-CT is the most suitable for this type of sensor, as the patient moves deep into the gantry.

Laser Sensor (Non-Patient Contact Type)



This sensor measures the reflection of laser light (infrared). Laser light is spotted on the patient’s skin, and the motion of the body surface (displacement of distance to the sensor) is displayed as a respiratory waveform. There are three models of the laser sensor with different focal length are provided: 250 mm, 120 mm and 85 mm. CT and radiotherapy are best suited for this type of sensor, as there is no contact with the patient and the angle of the laser may be setup obliquely.

Reduction of Delay Time



The Respiratory Gating System is used in combination with radiotherapy equipment and image diagnostic equipment. The biggest challenge for reducing the influence on the modality performance is the reduction of delay time. With AZ-733VI High-speed Gating Mode the

delay is a quarter of the time and in the Normal Gating Mode is at least half the time of Conventional devices. This realizes the higher accuracy in radiotherapy and image diagnosis. High-speed Gating Mode and Normal Gating Mode are to be used in accordance with the patient's respiratory condition, treatment plan or the external equipment combined.

**Delay time indicates the time from detecting the body surface movement due to the respiratory motion by a sensor to outputting Gate signal.*

Optimization

Optimization of respiratory gating (shorter treatment/imaging time) reduces patients' burdens.

Addition of New Gate Output Mode

“Level to Level” Mode is now available, which is mainly used in radiotherapy.

A phase is determined where the influence (movement) of respiratory phase is small, and the Gate signal is output to external equipment.

Regardless of inhalation or exhalation, Gate signal is output within the set level. Breath hold delivery and DIBH is also available.

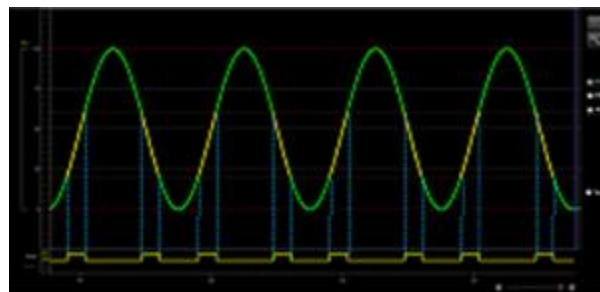


Table 1 In the above graph, Gate is output between Level 20 – 60, which results to Gate output twice per respiratory cycle.

Addition of Respiratory Monitor



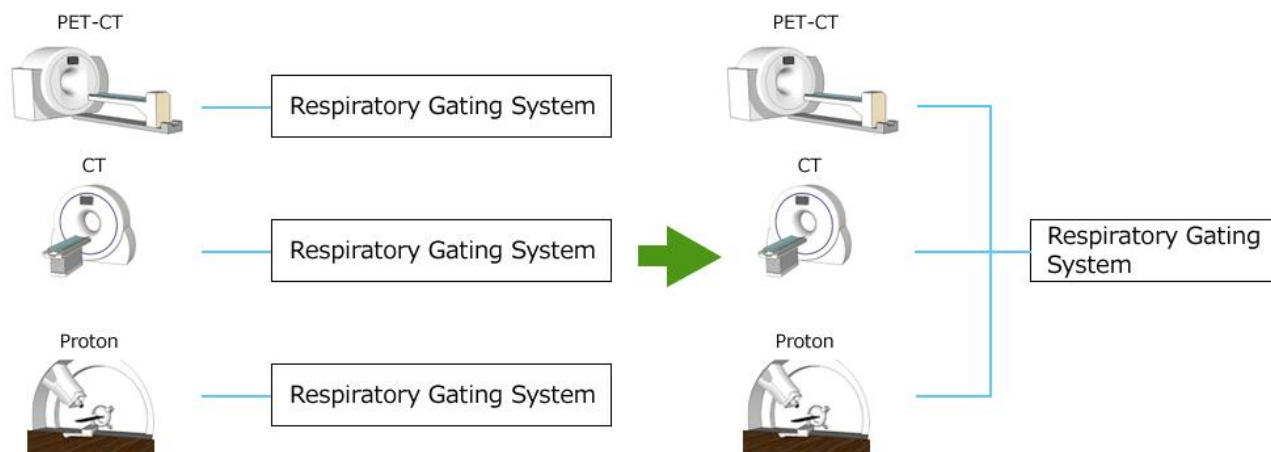
Respiratory Gating is a treatment / imaging dependent on the patient respiratory condition. A Respiratory Monitor is available so that patients can watch their own respiratory waveform and consciously breathe. Stable respiration is expected to contribute to shortening treatment and imaging time.

Extensibility

Respiratory Gating System AZ-733VI has unprecedented extensible features and it provides with new possibility and connectivity.

Highly Cost Effective

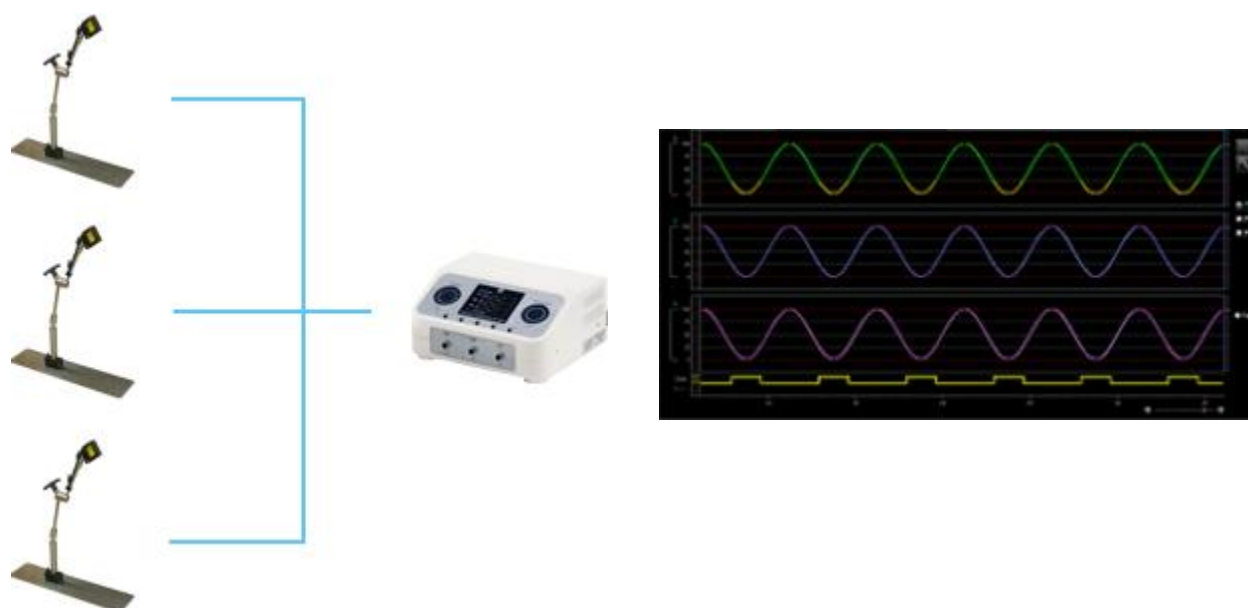
In a conventional respiratory gating system, it is connected to external equipment on one-to-one basis. But, in the new respiratory gating system AZ-733VI, up to three units of external equipment can be connected to one system (optional). With this feature, the system configuration corresponding to a customer’s installation condition or budget can be realized. Using the software,



the user simply selects which modality and which Gate signal is output.

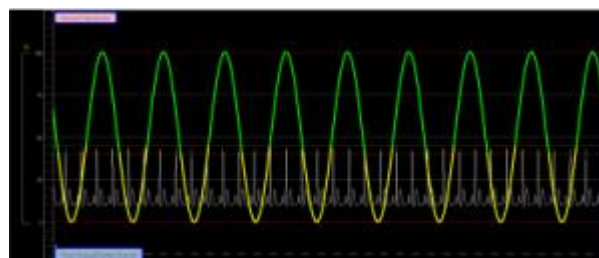
Use of Multiple Sensors

Respiratory Gating System AZ-733VI is able to use up to three Respiratory Sensors at a time. Since the body surface movement caused by respiratory motion differs to each patient, getting respiratory information from multiple positions makes it possible to perform respiratory gating at the most stable position.



ECG & Respiratory Gate Output

Respiratory Gating System AZ-733VI has the function of outputting ECG & Respiratory Gate signal by connecting ECG. At any overlapped timing of ECG trigger and Respiratory Gate signal, ECG & Respiratory Gate signal is outputted to external equipment.



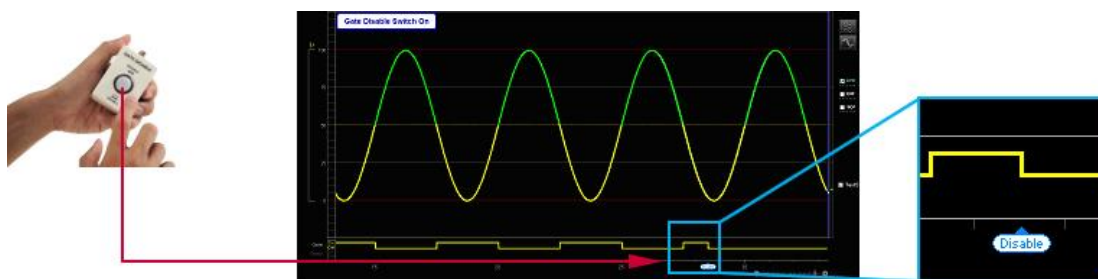
Safety Function

With original safety function, Gate output can be controlled and used safely.

Gate Output Suspension in an Emergency

Push a button when suspending Gate output.

Just push a button in an emergency, and it will suspend Gate output.



Detection of Abnormal Breathing

When the following abnormal breathing is detected, error message is displayed on the software and stop Gate output to external equipment.

1. Abnormal breathing due to sneeze or body motion
2. Abnormal respiratory rate
3. Respiration stoppage
4. Abnormal exhalation peak
5. Abnormal inhalation peak
6. Abnormality in average breathing

Convenience

Speed of set-up and ease of use contribute towards high levels of adoption and accommodate both regular users and therapists on rotation.

Easy Respiratory Waveform Adjustment



A major design improvement which has reduced set-up times is the ability to adjust the waveform whilst setting up the patient. The waveform is displayed on the LCD Screen of the Sensor Port, and can be adjusted manually with dial controls or automatically with one touch. This new feature improves the repeat-ability of the Sensor setting.

Contact



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