

Small Animal Monitoring and Gating System for use with PET, CT, SPECT and Optical

Monitoring

- ECG
- Temperature
- Respiration
- Optional parameters

Temperature control



Gating

- ECG
- Respiration
- ECG & respiration
- Auxiliary gate inputs

Waveform & trend data acquisition

The **Model 1025T monitoring and gating system** was designed to meet the physiological monitoring and gating needs for anesthetized mice, rats and larger animals in the PET, CT, SPECT, Optical and laboratory environments. The system consists of a data acquisition and processing module located near the animal which is connected to a PC located near the operator console. The PC displays multiple waveforms, measured values, trends and gating pulses. The data acquisition module is controlled by menu driven software from the PC.

The animal's electrocardiograph (ECG) waveform is measured using three leads with sub-dermal needle electrodes, gold disk surface electrodes or radio translucent pads. The waveform is processed to detect R-waves, ECG gate and determine the heart rate.

Temperature is measured using a small rectal temperature probe. The temperature measurement can be used with a heater to control the temperature of the animal. Both air and fluid heater systems are available. Temperature variations of ± 0.2 °C can typically be obtained.

A respiration waveform is measured using a small pneumatic pillow placed next to the animal's abdomen. The waveform is processed to detect inspiration, expiration, resp gate and determine respiration rate.

Optional modules can be used with the Model 1025T to provide pulse oximetry, capnography, invasive blood pressure, fiber optic temperature, minimally invasive pressure and ventilation.

Auxiliary TTL input channels allow the user to gate from user generated pulses. Optionally auxiliary analogue input channels allow the user to acquire, record, display and gate from user generated waveforms.

A sophisticated user configured gating algorithm allows gates generated from each measured waveform to be combined to supply a trigger to the imager. The user can control the start, stop and width of each gate.

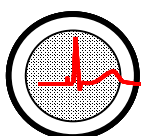
Power is supplied from an external 12 VDC power supply which operates from 100-230 VAC, 50-60 Hz.

Specifications:

ECG	Range:	40 - 900 BPM
	Accuracy:	$\pm 1\%$
	Input range:	-2.50 mV to 2.5 mV
	Input Impedance:	>10 M Ω at 10 Hz
	CMRR:	100 dB at 60 Hz
Temp	Probe types	rectal
	Range	0 - 100 °C
	Accuracy	+/-0.2 °C, 10-70°C
Resp	Range	15 - 300 bpm
	Accuracy	1 count
Module	Auxiliary inputs	2 TTL
	Power	+12 VDC
	Patient isolation	optical
	Size: hxxwd cm	6.1x13.4x14.6
Gating	R-wave to gate delay	selectable - 0 ms to 600 ms
	Expiration gate width and delay	selectable - 1 ms step size
Temp	Heater control	fiber optic PWM
Options:	Pulse oximetry	SpO ₂ , heart rate
	Capnography	CO ₂ , resp rate
	Invasive blood pressure	systolic, diastolic
	FO temperature	MAP, heart rate
	FO pressure	CT-compatible
		0.3 mm OD probe

PC requirements:

Software: Windows	any including 8
Hardware:	>1 GHz processor
	Serial or USB port
	Display 1024 x 768 or larger



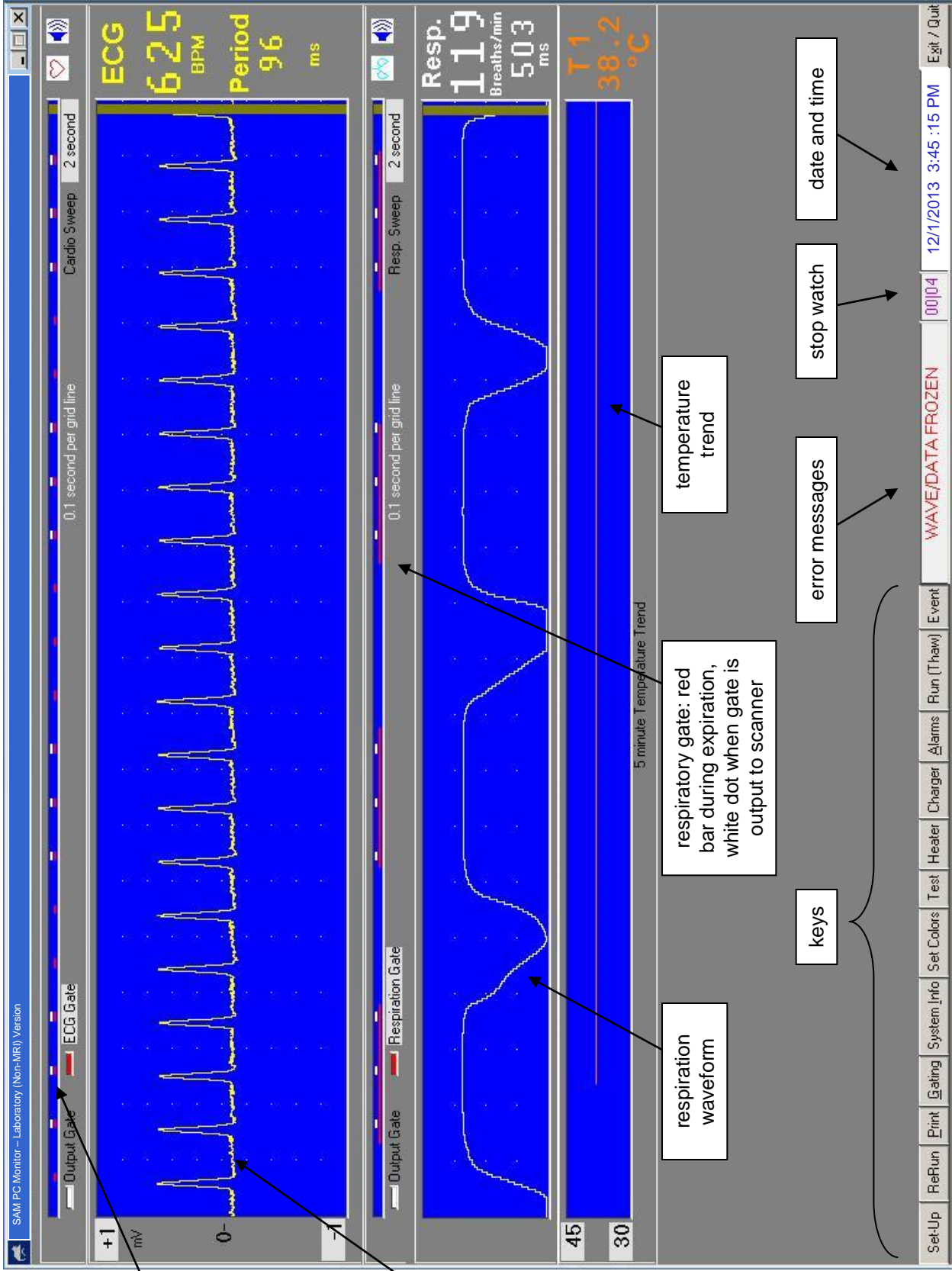
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Model 1025T Monitor Display



cardiac gate:
red dot when
R-wave is
detected,
white dot
when gate is
output to
scanner

ECG
waveform

respiration
waveform

respiratory gate: red
bar during expiration,
white dot when gate is
output to scanner

temperature
trend

keys

error messages

stop watch

date and time



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