ECG

GENERAL:

Lead Configuration: Full 12 Lead capability with independent outputs for each signal lead referenced to RL.

Output impedance: 1000 ohms from each lead to RL.

Amplitudes specified are for the peak R wave in lead II in a normal axis heart. Other leads are proportional as they would be in a human body.

NORMAL SINUS:

RATES: 30, 60, 80, 120, 160, 200, 240, and 300 BPM (Beats Per Minute).

AMPLITUDES: 0.5, 1.0, 1.5 and 2.0 mV.

AXIS DEVIATION: Normal, Horizontal, and Vertical.

ST SEGMENT VARIATION: Positive and Negative deviations of .05, .1, .15, .2, .5, and .8 times the R wave amplitude.

PEDIATRIC BEATS: A narrower heartbeat and lower blood pressures (see below).

ECG PERFORMANCE:

(amplitudes are for lead II and V1-V6, leads I and III are 1/2 amplitude)

SQUARE: 2 Hz at 1mV.
Amplitude accuracy is +/- 5% on lead II.

PULSE: 4 seconds at 1 mV.

SINE: 10, 40, 50, 60 and 100 Hz at 1 mV.

TRIANGLE: 2 Hz at 3mV.

ARRHYTHMIAS:

45 SELECTIONS of the following types:
- Supraventricular(9)
- Premature(9)
- Ventricular(15)
- Conduction(6)
- Pacemaker(6)

BASE NORMAL BEAT: 80 BPM at 1 mV amplitude. This is the type of normal beat used within arrhythmias.

PACEMAKER SPIKE:
- Duration: .15 mSec.
- Amplitude: 4.8 mV on lead II, 2.4 mV on leads I and III and V1-V6.

OUTPUT CONNECTORS:

LOW LEVEL OUTPUTS: 10 color coded special purpose binding posts. Mates with snap electrodes and 3.2 and 4.0 mm pins (IEC color codes available).

1 VOLT OUTPUT: 1/4 inch standard phone jack with lead II waveform at 1 V per mV of the low level lead II signal.

BLOOD PRESSURE (MODELS 215 AND 217 ONLY)

INPUT/OUTPUT IMPEDANCE: 300 ohms.

EXCITER INPUT VOLTAGE RANGE: 2 to 10 V.

EXCITER INPUT FREQUENCY RANGE: DC to 4000 Hz.

OUTPUT SENSITIVITY: 5 or 40 uV/V/mmHg.

OUTPUT RANGE: 0-300 mmHg on BP-1 and 0-30 mmHg on BP-2 and BP-3.

ACCURACY: 1% of range + 1% of setting + 1 count

RATES: All dynamic pressures are synchronized with all normal sinus rates, and physiologically track all arrhythmias. Systolic/Diastolic values are for rates of 80 BPM or less. At higher rates, the Systolic pressure stays the same and the Diastolic increases as the rate increases.

BLOOD PRESSURE CHANNEL 1 SELECTIONS:

ATM: 0 mmHg
ARTERIAL: 120/80 mmHg
LEFT VENTRICLE: 120/0 mmHg
RIGHT VENTRICLE: 25/0 mmHg
PULMONARY ARTERY: 25/10 mmHg
PULMONARY WEDGE: 10/2 mmHg
STATIC LEVELS: 0, 20, 40, 80, 100, 200, 250 and 300 mmHg

BLOOD PRESSURE CHANNEL 2 SELECTIONS:

ATM: 0 mmHg
CENTRAL VENOUS: 15/10 mmHg
RIGHT VENTRICLE: 25/0 mmHg
PULMONARY ARTERY: 25/10 mmHg
PULMONARY WEDGE: 10/2 mmHg
STATIC LEVELS: 0, 5, 10, 20 and 30 mmHg

BLOOD PRESSURE CHANNEL 3 SELECTIONS: (model 217 only)

SWAN-GANZ procedure: ATM-CVP-RV-PA-WEDGE
Manually sequenced.

PEDIATRIC SELECTION:
All blood pressure amplitudes are reduced to 75% of normal levels.

RESPIRATION (MODELS 215 AND 217 ONLY)

OUTPUT CONFIGURATION
Lead I, II or RL-LL.

BASELINE IMPEDANCE: 500 or 1000 ohms.

NORMAL PHYSIOLOGICAL SIMULATION

RATES: 15, 20, 30, 40, 60, and 120 BPM.

DELTA IMPEDANCE: 0, 0.1, 0.2, 0.5, 1.0 or 3.0 ohms.

APNEA: Off, Momentary, Continuous,
12 Sec and 32 Sec.

VENTILATOR SIMULATION

RATE: 40 BPM.

DELTA IMPEDANCE: 3.0 Ohms.

ARTIFACT

ECG:

50 Hz, 60 Hz, Muscle artifact, or baseline wander can be added to any ecg waveform. Selectable at x.5, x1, or x2 of a typical amplitude which is about 1/2 the R wave.

BLOOD PRESSURE:

Respiration artifact can be injected into any pressure waveform. Arterial and Left Ventricle waveforms are modulated by the selected respiration rate. Modulation on Arterial is 131/87 to 109/73. Modulation on Left Ventricle is 131/0 to 109/0. All other pressure waveforms have the respiration added to them with a value from 0 to 24 mmHg. The amount of artifact can be x.5 or x1 of the amount specified above.

DEFIBRILLATOR

Three interactive arrhythmias are included in which the patient goes into fibrillation and then may be defibrillated back to normal. The defibrillation may be from a pulse into the DEFIB SYNC input or by a menu selection. In the Cardioversion sequence, the timing of the defib pulse is measured in relation to the R wave, which determines whether defibrillation is successful.

DEFIB SYNC INPUT:

Triggered by a positive voltage greater than .4 Volts into an impedance of 10 kohms (+/-35 V max). Connector is a 1/8 inch miniature phone jack.

INTRA-AORTIC BALLOON PUMP (IABP)
(models 215 and 217 only)

On the BP-1 channel, simulates the effect on arterial blood pressure of an assist from an intra-aortic balloon pump. Uses the DEFIB SYNC input to recieve a signal from the balloon pump. When the pump goes on, the resultant effect is added to the arterial waveform. The effects of early, normal, and late inflation and deflation of the pump are simulated.

A high signal on the DEFIB SYNC indicates that the pump is on, and a low indicates the pump is off.

TEMPERATURE (models 215 and 217 only)

CHANNEL ONE: Fixed at 37 deg. C / 98.6 deg. F.

CHANNEL TWO: Selectable at
30 deg. C / 98.6 deg. F.
37 deg. C / 98.6 deg. F.
40 deg. C / 104 deg. F.

PROBE COMPATABILITY: 400 and 700 series YSI types.

ACCURACY: +/- 0.25 deg. C.

RS-232 INTERFACE

All functions may be controlled remotely. Baud rate is selectable at 300, 600, 1200 and 2400. Echo can be set on or off.

POWER

Nine volt alkaline battery (Duracell MN1604 or equivalent) provides 20 to 25 hours operation. Battery eliminator for line operation (Standard is for 115 VAC, European 230 VAC version available).

Note: Do not use mercury, air, or carbon-zinc batteries.

PHYSICAL CHARACTERISTICS

CASE CONSTRUCTION: High impact polystyrene
WEIGHT: 2 lb (.9 Kg)
SIZE: 7.5 x 5.4 x 1.8 inches (190 x 138 x 44 mm)

STANDARD ACCESSORIES

BATTERY ELIMINATOR
SOFT VINYL CARRYING CASE
INSTRUCTION MANUAL

OPTIONAL ACCESSORIES

BP CABLE unterminated
BP CABLE prewired for selected patient monitors
TEMPERATURE CABLE for 400 YSI only
TEMPERATURE CABLE for 400/700 YSI
HAND HELD REMOTE CONTROLLER
RS-232 CABLE