



The ApexPro telemetry receiver is a new space-saving design and can be conveniently mounted to a standard network equipment rack or shelf. Configuration allows up to four quad receiver modules, for a total of 16 multi-channel telemetry receivers in one compact unit. The flexibility to add quads with four receiver channels allows the system to grow with the number of patients which are monitored telemetrically.

The multi-channel receivers are admitted through the Clinical Information Center CIC Pro. The telemetry data is processed there, stored and displayed. The telemetrically acquired ECG-data can also be displayed at a bedside monitor. The use of LAN data transfer technology allows the receiver system to be located virtually anywhere within the hospital. LED displays offer quick, easy assessment of on-line status while diagnostic ports speed troubleshooting.

## Features

- Arterial fibrillation detection
- 3, 5, or 6 (dual V-Lead) wire sets
- Electronic software calipers at the central station
- 1, 24, 48, or 72 hours of Full Disclosure
- 4-Lead simultaneous and independent arrhythmia detection
- Masimo and Nellcor SpO<sub>2</sub>, blood pressure, and temperature via DinaLink and a DINAMAP vital signs monitors



# Specifications

## Dimensions

Size: H x W x D: 170mm ( 6.7 in) x 325 mm (12.8 in) x 250 mm (9.8in)

Weight: 6.4 kg (14 lb)

## Battery

Type: ANSI/NEDA 15A, 1.5 V AA alkaline (2 req.)

Life: 40 hours typical

Polarity: Electronic reverse polarity protection

Static withstand: Meets and exceeds IEC 801-2 second edition

Shock withstand: 5 random drops from 4 ft onto tiled concrete floor

Water resistance: IEC 529 IPX3 rating

Cleaning/Sterilization: Isopropyl alcohol, ammonia (diluted), Cidex®, sodium hypochlorite bleach (diluted) or mild soap (diluted). Consult operator's manual for cleaning instructions.

## Alarms & Controls

Battery integrity: Transmitted and indicated via LED

Lead fail indication: Transmitted and indicated via LED

Alarm Pause: Transmitted and indicated via LED

Graph request: Transmitted

Power on/off: Battery insertion/removal

## Transmission

Frequency stability:  $\pm 0.0001\%$  of assigned channel frequency

Modulation: GMSK

Bit rate: 10kb/sec

Dual antenna: Formed by leadwire shield and internal microstrip antenna

## ECG

Multi-channel (5- or 6-leadwire) configuration: I, II, III, Va, Vb, aVR, aVL, aVF

Leads analyzed simultaneously: Four (I, II, III and V)

Single-channel (3-leadwire) configuration: I, II or III, programmable

Heart rate detection range: 3 to 300 beats/minute

QRS detection range: 0.5 to 5 mV

Frequency response: 0.05Hz to 40Hz (-3dB)

Dynamic range:  $\pm 5$  mV (RTI)

Input offset:  $\pm 400$  mV (RTI)

Input impedance: 15 Megaohm min differential at 10 Hz

ECG gain selection: 5, 10, 20, 40 mm/mV (RTI)

Gain accuracy:  $\pm 5\%$  at 15 Hz

Common mode rejection: 100 dB min at 60 Hz

Lead fail detection: DC type; indicates leadwire failed (i.e., RA, LA, LL, Va and Vb)

Pacemaker detection:  $\pm 2$ mV to  $\pm 700$ mV (RTI); 100  $\mu$ sec to 2 msec; either polarity

Defibrillator protection:  $\pm 5000$  VDC, 360 joules into 50 ohm load

Defibrillator recovery time: Limited only by electrode recovery time.

Transmitter recovers within 2 sec

## Specifications (continued)

### Analog / Digital

A/D converter resolution: 10 bits, 9.76  $\mu$ V (RTI)  
Sample rate: 240 samples/sec  
Serial communications: 2-9600 baud asynchronous

### Operating Conditions

Ambient temperature: 0°C to 50°C (32°F to 122°F)  
Relative humidity: 5% to 95% (noncondensing)

### Storage Conditions

Temperature: -40°C to 70°C (-40°F to 158°F)  
Relative humidity: 30% to 95% (noncondensing)  
Pressure: 700 hPa to 1060 hPa

### Quad Receiver Module

Type: GMSK digitally demodulated  
UHF frequency range: 560.025 MHz to 613.975 MHz (U.S.) 420 MHz to 460 MHz (International)  
Frequency step resolution: Frequency synthesized tuning to any transmitter. 25 kHz spacing  
Frequency stability:  $\pm$  0.00015% of assigned channel frequency  
Demodulation: GMSK  
Bit rate: 10 kb/sec  
Sensitivity: 4 $\mu$ V (-95dBm) minimum for 1 bit error/1 million bits received

### Receiver System

Capacity: 1 to 4 quad receiver modules (4 to 16 receivers)  
System status indicators: 7 bicolor LEDs

### Network

IEEE 802.3 compatible, physical connector via 10 Base T  
Serial diagnostics: 19200 baud, 1 stop bit, 8 data bits, no parity, XON/XOFF flow control

### Power Requirements

Line Voltage: 85 to 264 VAC, 47 to 63 Hz  
Power consumption: 25 watts max with 4 quad receiver units  
Cooling: Free convection