

## *élance*™ Vital Signs Monitor

5 / 5i / 5c / 7 / 7i / 7c / 5 elite / 5i elite / 5c elite / 7 elite / 7i elite / 7c elite

### Summary

The *élance* 5 / 5i / 5c / 7 / 7i / 7c / 5 elite / 5i elite / 5c elite / 7 elite / 7i elite / 7c elite are integrated vital signs monitors with widescreen resistive touchscreen display. The monitors raise a new standard of style, convenience, economy, ease of use and reliability in patient monitors. Weighing not more than 2.4kg for the *élance* 5 series and not more than 2.7kg for the *élance* 7 series, including an up to 5-hour lithium-ion battery, they are one of the lightest full-featured vital signs monitors. With its 7cm depth, the *élance* vital signs monitors fit easily into even the most crowded bedside environments.



# élance™ Vital Signs Monitor

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## Features

### Parameters Supported

Standard parameters include Electrocardiogram (ECG), Respiration, Non-Invasive Blood Pressure (NIBP), Pulse Oximetry (SPO2), Dual Temperature. Additional parameters such as Dual Invasive Blood Pressure and Capnography are also available depending on the model configurations.

**User Interface** All controls are on-screen touch keys, with the exception of ON/OFF key. A tethered stylus is also available for function navigation.

**Display** Widescreen, color thin film transitive (TFT) liquid crystal display (LCD) with resistive touchscreen.

### Dimensions

#### 12.1 inch Display:

Width	291 mm (11.5 inches)
Height	221 mm (8.7 inches)
Depth	70 mm (2.8 inches)
Weight	2.7kg (6.0 lbs)

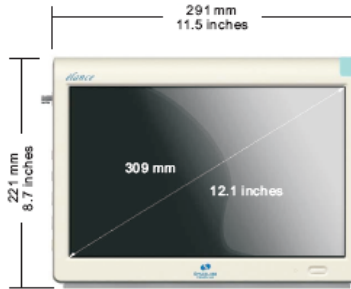
#### 10.2 inch Display:

Width	252 mm (9.9 inches)
Height	193 mm (7.6 inches)
Depth	70 mm (2.8 inches)
Weight	2.4kg (5.3 lbs)

2 LCD sizes are available:

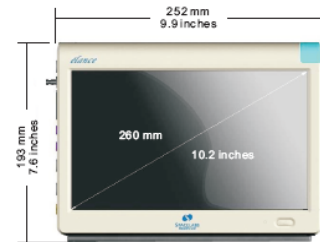
#### 12.1 inch Display:

Resolution	1280 x 800 pixels
Size (Horizontal)	262 mm (10.3 inches)
Size (Vertical)	164 mm (6.5 inches)



#### 10.2 inch Display:

Resolution	800 x 480 pixels
Size (Horizontal)	222 mm (8.7 inches)
Size (Vertical)	134 mm (5.3 inches)



**Sweep Speed:** A variety of speeds are available under parameter control.

### Parameters and Waveforms

The *élance 5* will display up to four waveforms and 6 numeric display zones.

All other model configurations will display up to five waveforms and seven numeric display zones.

**Trends** Displays up to 120 hours of tabular trend data. Save at 1 minute trend record time period.

Time interval of 1, 5, 10, 15, 30, 60, 120-minutes

**Power** An internal power supply provides power to the monitor

**Advanced Power Management** A built-in lithium-ion battery maximizes battery performance for up to 5 hours during transport.

**Connectors** RJ45 (10/100 Base T Ethernet), USB (for software updates, keyboard/mouse interface) and RJ11 (for nurse alert)

**Languages Supported** English, Spanish, Portuguese.

## Options

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**Ethernet** Provides Central surveillance capability from any monitored patient on the network. 10/100 Base T connector (RJ45) provided

**Recorder**, Dual channel recording capability via external Recorder

**Printing Method** Thermal array print head

**Resolution** 8 dots per mm (vertical) and 32 dots per mm (horizontal) at 25 mm per second sweep speed

**Prints** Manual and automatic alarm recordings for waveforms, vital signs data and trends

**Paper Speed** 25 mm per second

**Alarm Record** Records any parameters in an alarm state when the alarm recording is active

**Indicators** Paper out

**Record** Enables selection of up to two active monitor channels plus trends

## Product Specifications

Refer to the specific parameter section for the appropriate specifications.

### ECG

**Input** 5-lead or 3-lead ECG cable

**Input Dynamic Range** ±5 mV AC, ±300mV DC

**Voltage Range** +/-0.5 to +/-5 mV

**Defibrillator Discharge Recovery** 5 seconds

**Sample Rate** 250 samples per second (sps)

**Heart Rate Range** 15 to 300 bpm

**Accuracy** ±1% or ±2 bpm (whichever is greater)

**Signal Width** 70ms to 120ms (Q to S)

**Input Impedance** >2.5 MΩ at 10 Hz

**Display Sweep Speeds** 6.25, 12.5, 25.0 mm/sec

**Heart Rate Alarm Limits**

High 20 to 300 bpm

Low 15 to 295 bpm

**Heart Rate Resolution** 1 bpm

**Pacer Detection** Detects pacer pulses of ±2 mV to ±700 mV with pulse widths of 0.25 to 2 msec and rise times 10% of width not to exceed 100 msec.

**Display Bandwidth**

Extended 0.05 to 125Hz

Filter 0.5 to 30Hz

Monitor 0.5 to 40 Hz

**Ventricular Fibrillation Detection**

Evaluated with AAMI EC57 databases

**Channel Crosstalk**

<2.5 mm p-p per AAMI EC13

**Common Mode Rejection Ratio**

<1 mm, reference to input (rti) per AAMI EC13

**Baseline Stability**

≤ 0.5 mV

**Calibration Signal**

1 mV p-p ±10%

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## Respiration

<b>Input</b> 5-lead or 3-lead ECG cable	<b>Respiration Resolution</b> 1 breath per minute	<b>Accuracy</b> ±3 breath per minute
<b>Measurement Technique</b> Trans-thoracic Impedance	<b>Respiration Rate Alarm Limits</b>	<b>Numeric Update Rate</b> Every 1 second or immediately at the onset of an alarm
<b>Respiration Rate Range</b> 0 to 120 breaths per minute	High 6 to 120 breaths per minute Low 5 to 119 breaths per minute	<b>Waveform Sweep Speeds</b> 6.25, 12.5 and 25.0 mm/sec

## NIBP

<b>Measurement Method</b> Oscillometric	<b>Pulse Rate</b> 30 to 240 bpm	<b>Measurement Time</b>									
<b>Measurement Units</b> mmHg	<b>Resolution</b> 1 mmHg	30 seconds (typical); < 135 seconds (maximum)									
<b>Measurement Mode</b> Automatic or Manual	<b>Measurement Ranges</b>	<b>Automatic Cuff Deflation</b> Measurement time exceeding 135 sec in adult/pediatric or maximum pressure value exceeding 300 mmHg									
<b>Automatic Measurement Intervals</b> Adjustable at intervals of 3, 4, 5, 10, 15, 30, 60, 90, 120 or 240 minutes;	<b>Systolic Pressure Range</b> 30 to 250 mmHg	<b>Overpressure Protector</b> 290 mmHg at normal condition 300 +/- 10 mmHg at single fault condition									
<b>Blood Pressure Measurement Accuracy</b> Satisfies ANSI/AAMI SP10: 2002	<b>Diastolic Pressure Range</b> 10 to 210 mmHg										
<table border="1"> <thead> <tr> <th></th> <th>mean error</th> <th>standard deviation</th> </tr> </thead> <tbody> <tr> <td>systolic</td> <td>+1.7 mmHg</td> <td>6.3 mmHg</td> </tr> <tr> <td>diastolic</td> <td>- 3.2 mmHg</td> <td>6.8 mmHg</td> </tr> </tbody> </table>		mean error	standard deviation	systolic	+1.7 mmHg	6.3 mmHg	diastolic	- 3.2 mmHg	6.8 mmHg	<b>Mean Pressure Range</b> 20 to 230 mmHg	
	mean error	standard deviation									
systolic	+1.7 mmHg	6.3 mmHg									
diastolic	- 3.2 mmHg	6.8 mmHg									
	<b>Measurement Time</b> 30 seconds (typical); < 135 seconds (maximum)										

## Temperature

<b>Probe Type</b> Thermistor probe YSI 400	<b>Display Parameters</b> T1, T2, and delta temperature (DT) (two probes attached)	<b>Resolution</b> 0.1° C (±0.2° F)
<b>Units</b> °C or °F	<b>Accuracy</b>	<b>Numeric Update Rate</b> Every 3 seconds
<b>Measurement Range</b> 5.0° to 50° C (41.0° to 122° F)	Display Accuracy ±0.1° C plus probe accuracy Probe Accuracy ±0.1° C (±0.2° F)	<b>Alarm Limits</b> High 32.1° to 42.0° C (89.7° to 107.6° F) Low 32.0° to 41.9° C (89.6° to 107.5° F)

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## SPO2

### Spacelabs SpO2 (Option S)

**Measurement Method** Functional saturation (oxygen saturation of functional hemoglobins)

**Measurement Range**

O2 Saturation 30% to 100%  
Pulse Rate 30 to 250 bpm

**Display Sweep Speed** 6.25, 12.5, 25.0 mm/sec

**Sample Rate** 50sps

**Saturation Resolution** 1%

**Measurement Accuracy**

**O2 Saturation**

Without Motion 70 to 100% ±2%  
1 to 69% unspecified  
Low Perfusion 70% to 100% ±2%  
1% to 69 unspecified

**Pulse Rate**

Without Motion: 30 to 250BPM ±3BPM  
Low Perfusion: 30 to 250BPM ±3 BPM

**Pulse Rate Resolution** 1 bpm

**Saturation Alarm Limits**

High 51% to 100%  
Low 50% to 99%

**Numeric Update** Every 3 seconds

**TruLink® Sensors** Operate at or near 660 nm and 940 nm; total radiated optical power from 500 to 1,000 nm does not exceed 60 mW

### Masimo SET SpO2 (Option M)

**Measurement Method** Functional saturation (oxygen saturation of functional hemoglobins)

**Measurement Range**

O2 Saturation 1% to 100%  
Pulse Rate 25 to 240 bpm

**Saturation Resolution** 1%

**Pulse Rate Resolution** 1 bpm

**Pulse Rate Accuracy**

No Motion ±3 bpm  
Motion ±5 bpm  
Low Perfusion ±3 bpm

**Numeric Update** Every 3 seconds

**Saturation Alarm limits**

High 51% to 100%  
Low 50% to 99%

**Masimo Sensors** Operate at or near 660 nm and 905 nm; total radiated power from 500 nm to 1000 nm does not exceed 0.79 mW.

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## Measurement Accuracy (Arms)

Sensor Models	Weight Range	Saturation Accuracy 70 to 100%	
		No Motion	Low Perfusion†
<b>LNCS Reusable Sensors</b>			
LNCS DC-I	>30 kg	±2%	±2%
LNCS DC-IP	10 to 50 kg	±2%	±2%
LNCS TC-I	>30 kg	±3.5%	±3.5%
LNCS TF-I	>30 kg	±2%	±2%
<b>LNCS Adhesive Sensors</b>			
LNCS Amtx	>30 kg	±2%	±2%
LNCS Pmtx	10 to 50 kg	±2%	±2%

\* The accuracy specification under motion conditions is ±3%. Motion is defined as continuous rubbing and tapping motions at 2 to 4Hz, at amplitude of 1 to 2 cm, and continuous random frequency motion between 1 to 5Hz, at amplitude of 2 to 3 cm.

\*\* These sensors were not validated under motion conditions.

† Pulse amplitude >0.20%; % transmission >5% (LNOP Y-I sensor was not validated for low perfusion).

†† Saturation accuracy under no motion for neonatal, infant, or pediatric patients with congenital cyanotic cardiac lesions ±3% for 80 to 100%, ±4% for 60 to 80%, and ±3.3% for 70 to 100%.

These sensors have been clinically validated by Masimo against the Masimo MS-11 oximetry board.

### No Implied License

Possession or purchase of this device does not convey any express or implied license to use the device with unauthorized sensors or cables that would alone, or in combination with this device, fall within the scope of the Masimo patent rights.

## Invasive Blood Pressure

(élance 5i / 5c / 7i / 7c / 5i elite / 5c elite / 7i elite / 7c elite)

**Transducer Type** Strain-gauge, standardized to 5 µV/mmHg/V (±1%)

**Transducer Excitation Voltage** 5.00 VDC ±1%

**Dynamic Waveform Range** -50 to +300 mmHg

**Signal Bandwidth** 0 to 40 Hz

**Sample Rate** 50sps

**Measurement Units** mmHg

**Measurement Range** -50 to +300 mmHg

**Accuracy** ±2 mmHg or ±2 % (whichever is greater)

**Filter Frequency** 12Hz

**Alarm Limits**  
High -5 to +250 mmHg  
Low -10 to +245 mmHg

**Waveform Sweep Speeds** 6.25, 12.5, 25.0 mm/sec

**Display Parameters** Systolic, diastolic, and mean pressures displayed for arterial, pulmonary artery, umbilical artery, umbilical venous, and generic pressure; mean pressures displayed for all others

**Labels** Arterial (ART), Central Venous (CVP), Left Atrial (LAP), Pulmonary Artery (PA), Right Atrial (RAP), Umbilical Artery (UA), Umbilical Venous (UV), and Generic Pressure (PRS)

**Numeric Update Rate** Every 3 seconds

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## EtCO<sub>2</sub>

(élance 5c / 7c / 5c elite / 7c elite)

<b>Parameter Displayed</b> CO <sub>2</sub> waveform, EtCO <sub>2</sub> , FiCO <sub>2</sub>	<b>Alarm Limit Ranges</b>	<b>EtCO<sub>2</sub> Accuracy</b>
<b>CO<sub>2</sub> Measurement Range</b>	<b>EtCO<sub>2</sub></b>	0 to 38 mmHg, ± 2 mmHg
EtCO <sub>2</sub> 0 mmHg to 99 mmHg 0 kPa to 13.2 kPa	High 7 mmHg to 80 mmHg 0.8 kPa to 10.6 kPa	39 to 99 mmHg, ± (5% of reading + 0.08% for every 1 mmHg above 38 mmHg)
<b>Units</b> mmHg, kPa	Low 5 mmHg to 60 mmHg 0.6 kPa to 7.9 kPa	<b>Total System Response Time</b> < 5 seconds
<b>Display Sweep Speeds</b> 6.25, 12.5 and 25.0 mm/sec	<b>FiCO<sub>2</sub></b> 1 mmHg to 24 mmHg 0.1 kPa to 3.2 kPa	

## Classification

MDD Class IIb

EN 60601-1

**Class 1** Requires outlet with safety ground (Protective Earth) conductor Rated for continuous operation

**CISPR11, Group 1, Class A** Suitable for use in all establishments other than domestic that are connected to a low supply network

## Electrical Specifications

**Mains Power** AC Mains, 100 - 240 V,  
50 - 60 Hz, 2-1A

**Fuses** Qty 2, T1.0 A, 250 volts,  
IEC (5×20 mm)

**Isolation** EN 60601-1

**Internal Power Supply** 30W Medical  
Grade

**Battery** A single Li-ion battery  
provides up to 5 hours

**Compliance** 91/157/EEC Battery  
Declaration Directive

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### Environmental Requirements

#### Storage

Temperature -20 ° to 60 ° C  
(-4° to 140° F)

Humidity 15% to 95%  
(non-condensing)

Altitude Up to 12,200 meters  
(Up to 40,000 feet)

#### Operating

Temperature 0° to 40° C  
(32° to 104° F)

Humidity 15% to 95%  
(non-condensing)

Altitude Up to 4,572 meters  
(Up to 15,000 feet)

### Electromagnetic Compatibility

EN60601-1-2:2001 +A1:2004

#### Emissions

CISPR II , Class A

IEC 61000-3-2:2005 Harmonics

IEC 61000-3-3:2005 Flicker

#### Immunity

IEC 61000-4-2 ESD, 6 kV contact/  
8 kV air

IEC 61000-4-3 RF fields, 3  
volts/meter, 80% 2 Hz AM, 80 MHz  
to 2.5 GHz

IEC 61000-4-4 Burst, 1 kV data  
and I/O ports/2 kV power ports

IEC 61000-4-5 Surge, 1 kV  
differential/ 2 kV common mode

IEC 61000-4-6 Conducted RF, 3  
Vrms, 80% 2 Hz AM, 150 kHz to 80  
MHz

IEC 61000-4-8 Magnetic field (50/60  
Hz), 3 Amps/meter

IEC 61000-4-11 Power quality,  
voltage, and frequency variations

### Accessories

#### External Recorder, two-channel



P/N 685-0254-00  
*élance* Recorder

P/N 685-0254-01  
*élance elite* Recorder

#### Mounting Kits

A variety of mounting (wall mounts,  
tabletop mounts) and mobility solutions  
(roll stands, bedrail hook) are available  
from Spacelabs Healthcare.

P/N 016-0787-00  
Wall mount

P/N 016-0780-00  
10.2" Tabletop mount, White

P/N 016-0780-01  
10.2" Tabletop mount, Black

P/N 016-0782-00  
12.1" Tabletop mount, White

P/N 016-0782-01  
12.1" Tabletop mount, Black

P/N 016-0788-00  
Mounting Kit without Bedrail hook,  
White

P/N 016-0788-01  
Mounting Kit without Bedrail hook,  
Black

P/N 016-0789-00  
Mounting Kit with Bedrail hook, White

P/N 016-0789-01  
Mounting Kit with Bedrail hook, Black

P/N 016-0791-00  
Roll stand

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### Documentation

*élance Vital Signs Monitor Documentation CD-ROM (P/N 084-1963-00)*

### Regulatory Approvals



Meets EN 60601-1. CE marked in accordance with the Medical Device Directive 93/42/EEC.

EN 60601-1: 1990

EN 60601-2-27: 2005, ECG

EN 60601-2-30: 1999, NIBP

EN 60601-2-34: 2000, IBP

EN 60601-2-49: 2001, Multiparameter monitors

EN 60601-1-8: 2003, Alarms

EN 1060-1: 1996,  
Sphygmomanometers

EN 1060-3: 1997, NIBP

EN 1060-4: 2004 NIBP

EN 12470-4: 2001, Clinical Thermometers

EN ISO 9919: 2005, Pulse Oximetry

EN ISO 21647: 2004, Capnometers

ANSI/AAMI EC-13: 2002, Cardiac Monitors

ANSI/AAMI SP10: 2002,  
Sphygmomanometers