

# Aingeal Device

## Lightweight, body-worn Wi-Fi device for Surveillance Monitoring

Provides active monitoring for ambulatory adult patients such as post-surgery patients using a small, lightweight wearable device and innovative electrode array.

**Device:** attaches to the electrode array via snap-on magnets and transmits the physiological measurements over the hospital WLAN.

**Electrode array:** a disposable, pre-gelled single-patient-use array measuring respiration rate, single-lead ECG and temperature, which is applied to each side of the patient's torso.

**Battery charger:** can charge up to 12 device batteries with 24 hour battery life.

### Features

- Measures respiration rate and waveform, heart rate and single lead ECG (modified lead II) waveform and skin temperature.
- Lethal arrhythmias include asystole, ventricular fibrillation, tachycardia and bradycardia.
- High sensitivity and specificity with low false alarm rate.



## Technical specifications

### Monitoring

|                  |  |
|------------------|--|
| ECG              | Modified lead II   |
|                  | Range: 16 to 240 beats/min   |
|                  | Frequency response: 0.67Hz–40Hz                                    |
|                  | Sample rate: 360 Hz,<br>12 bit resolution                          |
| Respiration      | Impedance pneumography   |
|                  | Range: 4 to 40 breaths/min   |
|                  | Sample rate: 120 Hz,<br>12 bit resolution                          |
| Cardiac events   | Asystole, ventricular fibrillation,<br>tachycardia and bradycardia |
| Skin temperature | Sample rate: 2 Hz, 12 bit resolution                               |
|                  | Range: 31 to 42°C (88 to 107°F)                                    |

### Controls and indicators

#### Device

|                 |  |
|-----------------|--|
| WLAN status LED | Green: connection good   |
|                 | Orange: connection pending   |
| Lead status LED | The Blue LED will be ON if the device is not connected to the patient and will be OFF when connected to the patient once ECG and respiration are detected. |
| On/Off          | Hold down to switch On/Off   |

#### Battery charger

|                      |                              |
|----------------------|------------------------------|
| AC power LED         | Green: power connected       |
| Battery location LED | Orange: battery charging     |
|                      | Green: battery fully charged |

### WLAN transmission

|                     |  |
|---------------------|--|
| Protocol            | IEEE 802.11b/g                                   |
| Frequency range     | 2400 to 2483 MHz                                 |
| Channels            | 1 to 11 North America<br>1 to 13 Europe          |
| Receive sensitivity | -85 dBm  |
| Output power level  | +18 dBm (32 mW)                                  |
| Modulation          | DSSS (CCK-11, CCK-5.5, DQPSK-2,<br>DBPSK-1) OFDM |

## Environmental specifications

### Operating conditions

#### Device and electrode array

|                   |                                      |
|-------------------|--------------------------------------|
| Temperature       | 5 to 40°C (41 to 104°F)              |
| Relative humidity | 45 to 85% (non-condensing)           |
| Altitude          | -382 to 3,011 m (-1,253 to 9,878 ft) |

#### Battery and battery charger

|                   |                                      |
|-------------------|--------------------------------------|
| Temperature       | 5 to 40°C (41 to 104°F)              |
| Relative humidity | 45 to 85% (non-condensing)           |
| Altitude          | -382 to 3,011 m (-1,253 to 9,878 ft) |

### Transport and storage conditions

#### Device

|                   |                                       |
|-------------------|---------------------------------------|
| Temperature       | -40 to 70°C (-40 to 158°F)            |
| Relative humidity | 5 to 95% (non-condensing)             |
| Storage life      | Two years                             |
| Altitude          | -382 to 5,572 m (-1,253 to 18,280 ft) |

#### Battery charger

|                   |                                       |
|-------------------|---------------------------------------|
| Temperature       | -40 to 70°C (-40 to 158°F)            |
| Relative humidity | 5 to 95% (non-condensing)             |
| Altitude          | -382 to 5,575 m (-1,253 to 18,280 ft) |

#### Rechargeable battery

|  |  |
|--|--|
| Temperature                              | Charge: 0 to 45°C (32 to 113°F)            |
|  | Discharge: -20 to 60°C (-4 to 140°F)       |
| Storage life and capacity recovery rate: | One year: 15 to 35°C (59 to 95°F) > 85%    |
|  | 3 months: -10 to 45°C (14 to 113°F) > 90%  |
|  | < 1 month: -20 to 45°C (-4 to 113°F) > 90% |

|                   |                                       |
|-------------------|---------------------------------------|
| Relative humidity | 45 to 85% (non-condensing)            |
| Altitude          | -382 to 5,572 m (-1,253 to 18,280 ft) |

#### Electrode array

|                   |                                       |
|-------------------|---------------------------------------|
| Temperature       | 0 to 40°C (-32 to 104°F)              |
| Relative Humidity | 5 to 95% (non-condensing)             |
| Altitude          | -382 to 5,575 m (-1,253 to 18,280 ft) |

Refer to the user manual for full transport and storage conditions, and battery disposal instructions.

## Performance specifications

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|                   |  |
|-------------------|--|
| Water resistance  | IPX7 IEC60529, with battery<br>IPX4 when battery is disconnected |
| Impact resistance | IEC60601 15.3.3, 15.3.5  |

## Physical specifications

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### Device and battery

|                        |  |
|------------------------|--|
| Dimensions (H x W x D) | 7.1 x 9.6 x 1.8 cm<br>(2.8 x 3.8 x 0.7 in) |
|------------------------|--|

|        |               |
|--------|---------------|
| Weight | 84 g (3.0 oz) |
|--------|---------------|

### Battery charger

|                        |  |
|------------------------|--|
| Dimensions (H x W x D) | 23.7 x 18 x 4.7 cm<br>(9.3 x 7.1 x 1.8 in) |
|------------------------|--|

|        |                  |
|--------|------------------|
| Weight | 0.88 kg (1.9 lb) |
|--------|------------------|

## Power specifications

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### Battery charger

|               |                      |
|---------------|----------------------|
| Input Voltage | 100 to 240 VAC (max) |
|---------------|----------------------|

|           |             |
|-----------|-------------|
| Frequency | 50 to 60 Hz |
|-----------|-------------|

|         |     |
|---------|-----|
| Current | 1 A |
|---------|-----|

|              |      |
|--------------|------|
| Output Power | 20 W |
|--------------|------|

### Battery

|      |                          |
|------|--------------------------|
| Type | Rechargeable lithium-ion |
|------|--------------------------|

|          |        |
|----------|--------|
| Capacity | 1.0 Ah |
|----------|--------|

|                 |       |
|-----------------|-------|
| Nominal voltage | 3.7 V |
|-----------------|-------|

|                  |        |
|------------------|--------|
| Watt-hour rating | 3.7 Wh |
|------------------|--------|

|             |               |
|-------------|---------------|
| Charge time | 4 hours (max) |
|-------------|---------------|

|                 |                                     |
|-----------------|-------------------------------------|
| Operating cycle | 24 hours (5 minute sample interval) |
|-----------------|-------------------------------------|

|              |            |
|--------------|------------|
| Battery life | 500 cycles |
|--------------|------------|

## Warranty

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One year standard warranty.

## Certifications

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UL/IEC/EN 60601-1, IEC/EN 60601-1-2, IEC/EN 60601-1-8, IEC/EN 60601-2-27, IEC/EN 60601-2-49, ISO 80601-2-56.

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