



The **HeartStart MRx** has flexible, fast, and reliable 12-lead transmission capabilities so you can send data using your choice of technologies to wherever you need it to go – ED, Cath Lab, cardiologist's smart phone – to begin the next level of care. Only Philips has the advanced DXL 12-Lead ECG algorithm, which takes STEMI clinical decision support to a new level with unique capabilities that enable confident decision-making to help speed triage.

## Features

- Advanced DXL 12-Lead ECG algorithm that shows all 12 leads on screen to ensure a reliable 12-lead is acquired
- ST/AR Basic™ arrhythmia detection for 10 rhythm disturbances and irregularities
- FAST-SpO2 (Fourier Artifact Suppression Technology)
- Microstream® Capnography (EtCO2)
- Continuous temperature monitoring (core and skin) for post-resuscitation hypothermia protocols
- Invasive blood pressure (2 lines)
- Noninvasive blood pressure
- Vital signs trending
- Audio recording



# Specifications

## Dimensions

### Without External Paddles

Width: 12.4 in (313 mm)  
Depth: 8.3 in (210 mm)  
Height: 11.7 in (295 mm)

### With External Paddles

Width: 13.4 in (340 mm)  
Depth: 8.3 in (210 mm)  
Height: 13.6 in (345 mm)

## Weight

**13.2 lbs. (6kg):** Base unit with 1 battery, pads, and pads cable.

**+4.1 lbs. (1.86 kg):** With added carrying case.

**+2.5 lbs. (1.1 kg):** With added paddle tray and external standard paddles.

## Environmental

**Water Resistance:** Meets IEC 60601-2-4

**Solids Resistance:** IP2X

### Temperature

Operating: 32° - 113° F (0° - 45° C)

Storage: -4° - 158° F (-20° - 70° C)

**Humidity:** Operating: 0% to 95% relative

**Safety:** Meets EN 60601-1, UL 2601-1, CSA C22.2 No. 601-1-M90 CSA, EN 60601-2-4

## Display

**Dimensions:** 8.4 in diagonal (128 mm x 171 mm)

**Type:** TFT color LCD

**Resolution:** 640 x 480 pixels (VGA)

**Wave Viewing Time:** 5 seconds (ECG)

## Strip Chart Printer

### Printer

Standard: 50 mm (paper width) thermal array printer.

Optional: 75 mm (paper width) thermal array printer.

**Continuous ECG Strip:** Prints primary ECG lead with event annotations and measurements in real-time or with 10-second delay.

**Auto Printing:** Printer can be configured to print marked events, charge, shock, and alarms.

**Reports:** Event Summary, 12-Lead, Vital Signs Trending, Operational Check, Configuration, Status Log, and Device Information.

### Paper Size

1.97 in (50 mm) W by 100 ft. (30 m) L.

2.95 in (75 mm) W by 100 ft. (30 m) L.



## Specifications Continued

### Defibrillator

**Model:** HeartStart MRx (M3535A)

**Waveform:** Biphasic Truncated Exponential. Waveform parameters adjusted as a function of patient impedance.

**Output Energy:** Manual (selected): 1-10, 15, 20, 30, 50, 70, 100, 120, 150, 170, 200 Joules maximum energy, limited to 50 Joules for internal defibrillation. AED Mode (single energy output): 150 Joules into a 50 ohm load.

**Charge Time:** Less than 5 seconds to 200 Joules with a new, fully charged lithium ion battery at 25° C.

**Shock Delivery:** Via multifunction defib electrode pads or paddles.

**Quick Shock:** Less than 10 seconds from cessation of CPR to shock delivery.

#### Patient Impedance Range

Minimum: 15 ohm (internal defibrillation); 25 ohm (external defibrillation).  
Maximum: 150 ohm.

**AED Mode:** Shock advisory sensitivity and specificity meet AAMI DF-39 guidelines.

### Battery

**Type:** 6.0 Ah, 14.8 V, rechargeable lithium ion.

#### Dimensions

Height: 6.5 in (165 mm)

Width: 3.8 in (95 mm)

Depth: 1.6 in (42 mm)

**Weight:** 1.6 lbs. (0.73 kg)

**Charge Time:** Approximately 3 hours to 100%, 2 hours to 80%.

#### Capacity

At least 5 hours of monitoring with ECG, SpO<sub>2</sub>, CO<sub>2</sub>, temperature and two invasive pressures monitored continuously, NBP measured every 15 minutes, and 20 200J discharges (with a new, fully charged battery, operating at room temperature, 25° C).

At least 3.5 hours of monitoring with ECG, SpO<sub>2</sub>, CO<sub>2</sub>, temperature and two invasive pressures monitored continuously, NBP measured every 15 minutes, and pacing at 180ppm at 160mA.

#### Battery Indicators

Battery gauge on battery, capacity indicator on display; flashing RFU indicator, chirp, and 'Low Battery' message appears on display for low battery condition, when 10 minutes of monitoring time and 6 maximum energy discharges remain (with a new battery at room temperature, 25° C).



## Specifications Continued

### Data Storage

**Internal:** 12 hours of continuous ECG waveforms and events, maximum capacity of 55 event summaries.

**Data Card:** 60 event summary reports or 240 megabytes of patient data.

### ECG and Arrhythmia Monitoring

#### Input

Up to 4 ECG waves displayed and up to 2 ECG waves print simultaneously.

Lead I, II, or III obtained through 3-lead ECG cable and separate monitoring electrodes. With 5-lead cable, obtain leads aVR, aVL, aVF, or V. Pads ECG obtained through 2 multifunction defibrillation electrode pads.

**Lead Fault:** 'Lead Off' message and dashed line displayed, if an electrode or lead wire becomes disconnected.

**Pads Fault:** Dashed line displayed if a pad becomes disconnected.

**Heart Rate Display:** Digital readout on display 15 to 300 bpm, accuracy  $\pm 10\%$ .

**Heart Rate . Arrhythmia Alarms:** HR, Asystole, VFIB/VTACH, VTACH, extreme tachycardia, extreme bradycardia, PVC rate, Pacer not capture, Pacer not pacing.

**ECG Size:** 2.5, 5, 10, 20, 40 mm/mV, autogain.

### Available Options

**Non-Invasive Pacing:** SpO2 pulse oximetry.

**Non-Invasive Blood pressure:** CO2 monitoring.

**Invasive Blood Pressure (2 lines):** Continuous temperature monitoring.

**12-Lead Acquisition:** 12-lead transmission.

**Q-CPR Measurement and Feedback:** Audio recording.

**ACI-TIPI & TPI Predictive Instruments:** Periodic clinical data transmission.

**Batch/LAN Data Transfer**

