

**PHILIPS**

Cardiac  
resuscitation

HeartStart FRx



**Lead the way  
to save a life**



# For those trained **to save a life**

As a BLS trained responder, an AED and CPR can help you save a life.<sup>1</sup> Philips HeartStart FRx defibrillator guides you through the process of treating a victim of suspected sudden cardiac arrest. The FRx defibrillator provides real-time step-by-step voice commands, an audible metronome and CPR guidance\*.



\*The FRx can be configured to follow American Heart Association or European Resuscitation Council Adult/Child BLS guidelines.<sup>1-4</sup>

The HeartStart FRx defibrillator includes a variety of features to help guide the treatment of sudden cardiac arrest (SCA). With easy set-up, clear voice prompts, and rugged design, HeartStart FRx is designed for users trained in Basic Life Support (BLS).



## To help **save a life**

Cardiovascular disease is a leading cause of global mortality, accounting for almost 18 million deaths annually or 31% of all global mortality.<sup>5</sup> In developing countries, it causes twice as many deaths as HIV, malaria and TB combined. The survival rate from sudden cardiac arrest is less than 1% worldwide and close to 5% in the US.<sup>6</sup> Over half the victims of the most common cause of SCA can survive when treated early with CPR and shock from a defibrillator.<sup>7</sup>



When treating an infant or a child, simply insert the Infant/Child Key, and the FRx defibrillator adjusts instruction and shock energy. Pre-connected SMART Pads II can be used for both adults and children, so you don't waste a single second changing pads.

# Multiple features. Highly configurable.

The FRx defibrillator features intuitive, step-by-step voice instructions, including CPR guidance, to help guide BLS responders while treating a cardiac arrest. An audible metronome and voice commands help you time compressions and ventilations at a specified interval during CPR, and are paced to your actions. The FRx is highly configurable for local protocol considerations for example, in schools, communities, office buildings, gyms, corporations, etc.

## **CPR assistance**

Just press the i-button for assistance with CPR, and the FRx provides instructions and audio cues for the appropriate number, rate, and depth of chest compressions, as well as for each breath. If the Infant/Child Key is inserted, the instructions adapt to CPR instructions that are appropriate for an infant or child.

## **Defibrillation guidance**

To deliver a shock, simply place the pads on bare skin where indicated by the placement diagram, and press the orange Shock button when prompted. Flashing icons and a quick reference guide augment the voice instructions, so you'll know what to do even in a noisy setting.

## **EMS hand-off**

The FRx even reminds you to be sure that emergency medical services (EMS) has been called. And once EMS arrives, hand-off is fast and easy because the FRx pads are compatible with advanced defibrillators from Philips and other manufacturers. Special adapters allow our pads to be plugged into advanced care devices to provide continuity of care.



## **Ready to use the moment it arrives**

The HeartStart FRx Ready-Pack configuration arrives ready to use. Just pull the green tab to initiate the FRx self-test that confirms its readiness for use, and put the device into service. The FRx Ready-Pack comes with the FRx already inside its carry case, with pads connected, battery inserted, and a set of spare pads in place. Set-up is easy, and the Quick Setup Guide provides illustrated instructions for setting up the FRx.



## **Daily self-tests**

The FRx is designed to be a comprehensive self-testing device. It performs a series of automatic self-tests, including daily, weekly, and monthly self-tests to check pad readiness and verify functionality and calibration of circuits and systems, and it can go up to four years between battery replacements.



## **Designed to work where you need it**

Lightweight, rugged, and reliable, the FRx can withstand rough handling, extreme temperatures, and dusty or wet environments. Rigorous testing includes withstanding loads up to 500 kg (1100 lbs.), and drops from 1.22 m (4 ft.). It can even be used in standing water.



# Easy as 1–2–3

The FRx comes with pre-connected SMART Pads II, so it is ready to be used for both adults and children.



Patented Quick Shock typically administers a shock just eight seconds after CPR, making the FRx among the fastest in its class at delivering shock treatment after CPR.<sup>8</sup> Studies show that minimizing time to shock after CPR may improve survival.<sup>9–12</sup> As the Guidelines note, “Reduction in the interval from compression to shock delivery by even a few seconds can increase the probability of shock success.”<sup>13</sup>

## Easy as 1–2–3 in an emergency



1

Press the green On/Off button, which activates voice instruction and visual icons.



2

Place the pads on the patient as directed.



3

When advised by the device, press the orange Shock button.



# Advanced technology. Proven therapy.

The FRx contains patented technology that adapts to your actions.



- Integrated SMART Pads II placed on the victim's bare skin sense and adapt the defibrillator's instructions to your actions.
- SMART Analysis automatically assesses the heart rhythm and will only deliver a shock if the rhythm is determined to be shockable – even if the Shock button is pressed.
- Sensors in the pads immediately measure the resistance of the patient's body and adjust shock attributes accordingly.
- Artifact detection allows ECG analysis even in the presence of most electrical noise sources. When challenging sources of artifact are detected, the voice prompts suggest corrective action.

#### **For infants, children, and adults**

SMART Pads II can be used for both adults and children. Insert the Infant/Child Key into the FRx to instantly change the device settings for treating an infant or child. The defibrillator adjusts its CPR guidance to provide special pads placement and CPR instructions. The icons on SMART Pads II also flash to show optimized pads placement, and the device reduces defibrillation therapy to a level more appropriate for an infant or child.

Because you don't have to switch pads based on the person's age, you don't need separate pads for adults and children on hand.

#### **Proven therapy**

At the core of all HeartStart defibrillators are SMART Analysis and SMART Biphasic technologies. SMART Analysis determines if a shock is needed, and the SMART Biphasic shock waveform is effective at treating cardiac arrest.<sup>14</sup>

# HeartStart FRx defibrillator specifications

## Defibrillator

Defibrillator family	Order 861304. Defibrillator, battery, SMART Pads II (1 set), Setup and Maintenance Guides, Owner's Manual, Quick Reference Guide, date sticker
HeartStart FRx Ready-Pack configuration	Order Option R01. Defibrillator, battery, carry case, SMART Pads II (1 pre-connected set, 1 spare set), Setup and Maintenance Guides, Owner's Manual, Quick Reference Guide, date sticker
Waveform	Truncated exponential biphasic; waveform parameters adjusted as a function of each patient's impedance
Therapy	Adult defibrillation: nominal peak current 32 A (150 J nominal into a 50-ohm load) Pediatric defibrillation with optional FRx Infant/Child Key installed: nominal peak current 19 A (50 J nominal into 50-ohm load)
Protocol	Device follows preconfigured settings; defibrillation and CPR protocol can be customized using HeartStart Event Review software

## User interface

Instructions	Detailed voice prompts and visual icons guide responder through use of the defibrillator
CPR guidance	Verbal instructions for adult and infant/child CPR provides instructions and audio cues for the appropriate number, rate, and depth of chest compressions, as well as for each breath
Controls	Green On/Off button, blue-lit i-button, orange Shock button, optional Infant/Child Key
Indicators	Ready light, blue-lit i-button, caution light, illuminated pads, icons; Shock button lights up when shock is advised

## Physical

Size	6 cm x 18 cm x 22 cm (2.4" x 7.1" x 8.9") D x H x W
Weight	With battery and pads case: 1.6 kg (3.5 lbs.)

## Environmental/physical requirements

Sealing	Waterjet-proof IPX5 per IEC60529 Dust-protected IP5X per IEC60529
Temperature	Operating/Standby: 32° – 122° F (0° – 50° C) Transient operating (for 20 minutes or less, after rapid transition from 68° F [20° C]): -4° to 122° F (-20 to 50° C); under non-condensing humidity conditions.
Altitude	-400 m to 4,572 m (-1312 ft to 15,000 ft)
Aircraft	Meets RTCA/DO-160G:2002 Section 21 (Category M - Radiated Emissions) and Section 20 (Category M - Conducted Immunity, and Category D - Radiated Immunity).
Crush	500 kg (1100 lbs)
Drop	Withstands 1.22 m (4 ft) drop on any edge, corner, or face of the device onto masonry surface.
Vibration	Operating: meets MILSTD 810G Fig. 5146E-1, random. Standby: meets MILSTD 810G Fig. 5146E-2, swept sine (helicopter).
EMI (radiated/immunity)	Meets CISPR 11 Group 1 Class B and IEC 61000-4-3

## Data recording and transmission

Infrared	Wireless transmission of event data to a PC using the IrDA protocol
HeartStart Event Review software	Data management software (optional) for download and review of data retrieved through defibrillator's infrared data port
Data stored	First 15 minutes of ECG and the entire incident's events and analysis decisions

## Patient analysis system

Patient analysis	Evaluates patient ECG to determine if a rhythm is shockable. Rhythms considered shockable are ventricular fibrillation (VF) and certain ventricular tachycardias (VT) associated with lack of circulation. For safety reasons, some VT rhythms associated with circulation will not be interpreted as shockable, and some very low-amplitude or low-frequency rhythms will not be interpreted as shockable VF.
Sensitivity/specificity	Meets AAMI DF80 guidelines and AHA recommendations for adult defibrillation
Shock advised	Able to deliver a shock as soon as the device indicates a shock is advised
Quick Shock	Able to deliver a shock after the last chest compression of a CPR interval, typically in 8 seconds
Shock-to-shock cycle time	Typically less than 20 seconds between shocks in a series
Artifact detection	Allows ECG analysis even in the presence of most pacemaker artifact and electrical noise sources; other artifacts are detected and corrective voice prompts issued

## Battery (M5070A)

Item number(s)	Standard: M5070A Aviation: 989803139301 (TSO C-142, U.S. only)
Type	9 Volt DC, 4.2 Ah, lithium manganese dioxide, disposable long-life primary cell
Capacity	Minimum 200 shocks or 4 hours of operating time (EN 60601-2-4:2003)
Install-by date	Battery is labeled with an install-by date of at least five years from date of manufacture
Standby life	Four years typical when battery is installed by the install-by date (will power the AED in standby state within the specified standby temperature range, assuming one battery insertion test and no defibrillation uses)

## SMART Pads II

Item number	989803139261
Active surface area	80 cm <sup>2</sup> (12.4"²) each 85 cm <sup>2</sup> (13.2"²) each
Cable length	121.9 cm (48")
Use-by date	Pads case is labeled with a use-by date of at least two years from date of manufacture
Infant/Child Key	Item # 989803139311

## Training SMART Pads II

Item number	989803139271
Function	Special pads place HeartStart FRx into training mode and disable its energy delivery capability; features eight real-world training scenarios

## Automated and user-activated self-tests

Daily automatic self-tests	Tests internal circuitry, waveform delivery system, pads, and battery capacity
Pads integrity test	Specifically tests readiness-for-use of pads (gel moisture)
Battery insertion test	Upon battery insertion, extensive automatic self-tests and user-interactive test check device readiness
Status indicators	Blinking green "Ready" light indicates ready for use; audible "chirp" indicates need for maintenance

\* Refer to the HeartStart FRx Defibrillator Owner's Manual for detailed product instructions. All specifications based on 25° C unless otherwise noted. The defibrillator and its accessories are made of latex-free materials.



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