PHILIPS

Cardiac resuscitation

HeartStart FRx

Lead the way to save a life

Defibrillator with Life Guidance

For those who
get there first

With access to the right equipment and support, everyone can help save a life. Philips HeartStart FRx defibrillator with Life Guidance acts as your personal coach to guide you through a cardiac emergency with a simple, step-by-step process. Adaptive instructions keep you on track and intelligent sensors automatically deliver the right therapy, helping give you the confidence to lead the way to save a life.

The HeartStart FRx defibrillator includes advanced Life Guidance features to help guide the treatment of sudden cardiac arrest. With easy set-up, clear voice prompts, and rugged design, HeartStart FRx is designed for all on-the-spot responders.

Power to **save a life**

In the United States, it is estimated that SCA outpaces deaths from prostate cancer, house fires, traffic accidents, and HIV, combined.[1-4] Yet there is hope. Over half the victims of the most common cause of SCA can survive when treated early with CPR and shock from a defibrillator.[5]

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.

Ready to act.
Ready to go.

The FRx defibrillator features Life Guidance intuitive, step-by-step voice instructions, including CPR coaching, to help give responders the confidence that's needed while treating a cardiac arrest. A clear, calm voice and descriptive visual icons guide you through every step, from pad placement to cardiopulmonary resuscitation (CPR) and shock delivery. The voice prompts are paced to your actions, so that you don't need to worry about feeling rushed, overwhelmed, or slowed down.

CPR assistance
Just press the i-button for assistance with CPR, and Life Guidance 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 the moment it arrives
The HeartStart FRx Ready-Pack configuration arrives virtually ready to rescue. 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 you have the peace of mind of knowing the device is deployed correctly.

Ready the moment you need it
The FRx is designed as one of the most comprehensive self-testing devices on the market. It performs more than 85 automated 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.

Ready for any environment
On the scene with law enforcement, on the field with student-athletes, or on the job with employees, the FRx is the solution for treating SCA in environments and conditions too demanding for other defibrillators. Lightweight, rugged, and reliable, it can withstand rough handling, extreme temperatures, or dusty or wet environments. Rigorous testing includes jetting water and withstanding loads up to 500 kg (1100 lbs) and drops from 1.22 m (4 ft).

Save time. **Save lives.**

The FRx is ready for you when you arrive on the scene. Pre-connected SMART Pads II can be used for both adults and children, helping deliver therapy more quickly.

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. Studies show that minimizing time to shock after CPR may improve survival.[6-9] 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."[10]

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.

Personalized therapy. **Enhanced** care.

The FRx contains remarkable technology that adapts to the situation at hand.

- Integrated SMART Pads II placed on the victim's bare skin sense and adapt the defibrillator's instructions to your actions every step of the way.
- SMART Analysis automatically assesses 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 pad also immediately measure the resistance of the patient's body and adjust shock attributes accordingly, so that the right current is delivered to the heart on every needed shock.
- Artifact detection allows ECG analysis even in the presence of most pacemaker artifacts and many other electrical noise sources. When more 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. Simply insert the Infant/Child Key into the FRx to signal to the device that you're treating an infant or a child. The defibrillator adjusts its Life Guidance to provide special pads placement and CPR instructions. The pads icons also flash to show you the optimized pads placement, and the device reduces defibrillation therapy to a level more appropriate for an infant or a child.

Because you don't have to switch pads based on the person's age, you can deliver therapy quickly, and you don't have the extra expense of purchasing separate pads for adults and children.

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 highly effective at treating cardiac arrest, yet reduces stunning of a fragile heart.[11] Effectiveness of these technologies is proven by more than 40 published, peer-reviewed studies.[12]

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 coaching	Voice coaching 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^2 (12.4″^{2}) each 85 cm^2 (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.

1. Go AS, Mozaffarian D, Roger VL, et al. Heart disease and stroke statistics — 2013 update: A report from the American Heart Association. Circulation. Published online December 12, 2012.
2. CDC National Vital Statistics Report, Vol. 60, No. 3, Dec. 29, 2011.
3. CDC Fire Deaths and Injury Fact Sheet.
4. 2011 U.S. Breast Cancer Statistics, www.breastcancer.org.
5. 2010 European Resuscitation Council Guidelines. Resuscitation. 2010;81:1277-1292.
6. Yu T, et al. Adverse Outcomes of Interrupted Precordial Compression During Automated Defibrillation. Circulation. 2002;106:368-372.
7. Eftesol T, Sunde K, Steen PA. Effects of Interrupting Precordial Compressions in the Calculated Probability of Defibrillation Success During Out-of-Hospital Cardiac Arrest. Circulation. 2002;105:2270-2273.
8. Snyder DE and Morgan C. Wide Variations in Cardiopulmonary Resuscitation Intervals Among Commercially Available Automated External Defibrillators May Affect Survival Despite High Defibrillation Efficacy. Critical Care Medicine. 2004;32(9) Supplement:S421-S424.
9. Edelson D, et al. Effects of compression depth and pre-shock pauses predict defibrillation failure during cardiac arrest. Resuscitation. 2006;71:137-145.
10. American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Circulation. 2010;122 (suppl 3):S706-S719.
11. Tang W, et al. The Effects of Biphasic Waveform Design on Post-Resuscitation Myocardial Function. Journal of the American College of Cardiology. 2004;43(7):1228-1235.
12. Philips Medical Systems. SMART Biphasic Studies, listed alphabetically by study author:http://www.healthcare.philips.com/au_en/products/resuscitation/biphasic_technology/references.wpd

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Printed in The Netherlands.
4522 991 17861 * MAY 2016