Trusted most often by those trained to save lives

Philips HeartStart FR2+ Defibrillator
Product information

Updated for Guidelines 2005

PHILIPS

The Philips HeartStart

FR2+ Defibrillator

Each year sudden cardiac arrest (SCA) strikes approximately 340,000 people in the U.S. alone and hundreds of thousands more worldwide. Fewer than 5% of those victims survive, largely because emergency medical services do not reach them in time. The combination of timely CPR and defibrillation is a highly effective treatment for the most common form of SCA, significantly improving the chances of survival.

Now with SMART CPR and Quick Shock

Its host of features makes the FR2+ an extremely versatile and rugged defibrillator, enabling responders to potentially save the life of a coworker, friend, patient or fellow citizen under demanding circumstances.

Lightweight
Weighs just under 5 pounds fully equipped.

Rugged
Designed for use in extreme environments and conditions.

Intuitive
1-2-3 operation, with text and voice prompts.

Capable
Can be used on anyone of any age, including infants and children.

Ever-ready
Powered by either a long-life disposable or a rechargeable battery.

Effective
Clinically proven low-energy waveform.

Tools for the pros; simplicity for the lay responder

The HeartStart FR2+ has come to be a trusted tool of professional responders and designated response teams in the workplace and public settings. Its clean, uncluttered design is optimized for fast, efficient operation and rapid delivery of defibrillation therapy. Commands are clear and concise: ideal for responders who are trained, drilled, and ready to help save a life now.

The HeartStart FR2+ offers features that make hand-off to advanced life support (ALS) trained professionals seamless to ensure continuity of care for the patient. An ECG display is available, and the FR2+ can be configured to allow ALS responders to switch to a manual mode, giving them more decision-making control. And defibrillator pads adapters enable the pads to remain on the patient when transferring to many popular ALS manual defibrillators from Philips and other manufacturers.

But don't be misled by its advanced capabilities. The HeartStart FR2+ is extremely easy to use. Its design is based on years of research refined through Philips human factors experts, and user testing with the full range of responders, from healthcare professionals to lay people. In fact, hundreds of thousands of citizens are already trained and ready to help save a life with the FR2+.

Optimized for challenging environments

The HeartStart FR2+ is the right choice for harsh, outdoor, or mobile use. It combines natural sounding voice instructions that are loud and clear, with text prompts on a large, bright back-lit display. This makes it ideal if you anticipate use in noisy or poorly-lit settings. And at just 4.7 pounds, it's incredibly small and lightweight so it won't weigh you down.

Versatility

The FR2+ is designed to be highly flexible and versatile. You can tailor your FR2+ to match your specific response protocol.

Infant and child defibrillation

The FR2+ can treat patients of any age. When equipped with special infant/child defibrillator pads that reduce the energy of the FR2+'s shock to a more appropriate level, you can safely treat a child or infant in cardiac arrest.

Conscious monitoring

The reusable 3-leadwire FR2+ ECG assessment module enables the professional responder to proactively use the FR2+ to assess the rhythm of patients who are not in cardiac arrest, but are conscious, breathing, and suspected of being at risk for cardiac distress. This small, lightweight monitoring solution is ideal for in- and out-of-hospital patient transport, bike medics, situations requiring long or difficult travel, fire rigs that may be staffed on occasion by paramedics, clinics, and physicians' offices.

Hundreds of thousands of citizens are already trained and ready to save a life with the HeartStart FR2+.

Ready to use

The HeartStart FR2+ is reliable and virtually maintenance-free. It automatically performs daily, weekly, and monthly self-tests of the battery, electrical components, and subsystems. A highly visible status indicator shows at a glance whether the FR2+ has passed its last self-test and is ready for use.

Reliable analysis technologies

The FR2+ uses Philips' patented SMART Analysis algorithm to assess the patient's heart rhythm and determine if it is shockable. Research shows that for some patients, especially those in long-duration cardiac arrest, CPR prior to defibrillation may provide more benefit.[1, 2, 3] At the discretion of the medical director, the defibrillator's SMART CPR algorithm can be configured to look at characteristics of a shockable heart rhythm and compute the likelihood that spontaneous circulation will return with an initial shock. Depending on the results, the caregiver is advised to provide either an immediate defibrillation shock or CPR first followed by a shock.

Quick Shock

Research also suggests that the opportunity for survival can be improved if interruptions to CPR are minimized.[4, 5] As American Heart Association Guidelines 2005 notes, "Reduction in the interval from compression to shock delivery by even a few seconds can increase the probability of shock success."[6]

The Quick Shock capability of the FR2+ readies the defibrillator within seconds (10 seconds typical) to deliver a shock, reducing the time between CPR and defibrillation.

Proven therapy

When a shock is advised, the FR2+ prompts the user to deliver Philips' low-energy SMART Biphasic waveform, a highly effective defibrillation therapy that is also gentle to the heart. No other external defibrillation therapy has been supported by more published studies.

Realistic training

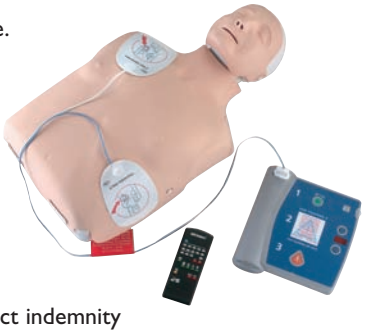
To help responders maintain their skills, Philips gives you a wide range of training solutions.

When equipped with training pads and the rechargeable training and administration pack, you can use your FR2+ as a trainer. Its shock delivery capability is disabled while you train with ten scenarios. When you connect the FR2+ to a simulator or a special manikin that simulates an ECG rhythm, you can elicit realistic FR2+ responses to various heart rhythms for even more refined training.

Philips also offers an economical AED trainer that comes with ten scenarios. An optional remote control enables instructors to pace the scenario to match their instruction, and to challenge the trainee with surprise scenario changes. Also available is the comprehensive AED Little Anne training system, featuring a manikin that gives the student feedback on pad placement.

Comprehensive data management

To maintain high standards of response timeliness and quality, many organizations place a high premium on detailed retrospective event reporting. The FR2+ facilitates this with an optional data card that captures up to 8 hours of patient heart rhythm, defibrillator use and, if configured, voice recording of the event. The removable data card lets you produce a variety of reports using the HeartStart Event Review suite of software products, without taking your FR2+ out of service.



Built to perform and backed by Philips

A five-year warranty and limited product indemnity comes with every HeartStart Defibrillator. Best of all, neither maintenance nor service contracts are required to maintain indemnification benefits. An extended two-year warranty is available. Coupled with the standard five-year warranty, the extended warranty gives you peace of mind, knowing your investment is protected for up to seven years.

Philips HeartStart Defibrillators enable responders to treat SCA quickly wherever it happens — at work, at play, in the air, in emergency vehicles, and in medical facilities — by providing them the power to save a life.

Philips HeartStart FR2+ Defibrillator

Product specifications

Defibrillator

Defibrillator Model	With ECG M3860A With Text Only Display M3861A
How Supplied	Defibrillator, instructions for use, standard battery, defibrillator pads (2 pair), Quick Reference Guide
Waveform	Truncated exponential biphasic. Waveform parameters adjusted as a function of patient impedance.
Energy	Single energy output. Adults: 150 J nominal into a 50 ohm load; Infant/Child: 50 J nominal into a 50 ohm load.
Charge Time from Shock Advised	Typically less than 10 seconds.
Charge Time in Manual Mode	Typically less than 5 seconds.
Shock-to-Shock Cycle Time	Typically less than 15 seconds (including analysis time) in automated mode.
Protocol	Text and voice prompts guide user through protocol. Follows pre-configured settings. Can be modified with the M3864A training and administration pack.
Shock Delivery	Via defibrillator pads placed in anterior-anterior (lead II) position for adult defibrillation and anterior-posterior for infant/child defibrillation.
Controls	On/Off, Shock, screen contrast/option buttons.
Indicators	LCD screen, beeper, audio speakers, status indicator, Shock button, connector socket LED.
Advanced Mode	Configurable protocol.

Physical

Size	
Height	6.6 cm. (2.6 inches)
Width	21.8 cm. (8.6 inches)
Depth	21.8 cm. (8.6 inches)
Weight	
With battery	2.1 kg. (4.7 pounds)
Without battery	1.8 kg. (3.9 pounds)

ECG Display (M3860A)

Screen	High-resolution LCD with bright back-light.
Screen Dimensions	2.8 inches wide x 2.3 inches high (7.0 cm x 5.8 cm).
Display Range	Differential: ±2 mV full scale (nominal).
Sweep Speed	23 mm/second (nominal).
Frequency Response	1 Hz to 20 Hz (-3dB) (nominal).
Sensitivity	1.16 cm/mV (nominal).
Heart Rate	30 to 300 beats per minute updated each analysis period during monitoring.
Monitored Lead	Anterior-anterior (lead II) placement with adult defibrillation pads or ECG Assessment Module (M3860A only).

Patient Analysis System

Patient Analysis	Per protocol, evaluates patient ECG and signal quality to determine if rhythm is shockable, and evaluates connection impedance for proper defibrillation pad contact.
Sensitivity/Specificity	Meets AAMI DF-80 guidelines and AHA recommendations for adult defibrillation (Circulation 1997;95:1677-1682).
SMART CPR (configurable)	Enables support of an automated or user-initiated CPR interval prior to defibrillation. The AUTO 1 and AUTO 2 settings automate the decision of whether to provide CPR first or deliver a shock first based on the amplitude and frequency of the presenting shockable rhythm. Once the decision is made, FR2+ provides the responder with the appropriate prompts. SMART AUTO 1: advises CPR for patients with a presenting rhythm typical of very long-duration cardiac arrest. SMART AUTO 2: advises CPR for an expanded group of patients inclusive of those in Auto 1, having a rhythm typical of long duration cardiac arrest. USER: user-initiated CPR Pause interval. Supports a protocol under which the responder decides whether to perform CPR first. A Pause-for-CPR button is enabled, and can be pressed at the responder's discretion.
Quick Shock	Able to deliver a shock in typically less than 10 seconds after the end of a CPR interval.

HeartStart Adult Defibrillation Pads

Configuration	DP2: two pair or DP6: six pair.
How Supplied	Disposable self-adhesive pads with cable and connector.
Surface Area	Meets AAMI DF-80 guidelines.
Cable Length	Approximately 122 cm (48 inches).

HeartStart FR2 Infant/Child Defibrillation Pads (M3870A)

Patient	Under 8 years or 25 kg (55 pounds).
Defibrillator Compatibility	FR2-series (FR2 and FR2+) automated external defibrillator only.
Configuration	M3870A FR2 Infant/Child Reduced Energy Defibrillator Pads. 1 set per package.
How Supplied	Disposable self-adhesive pads with cable and connector.
Energy Delivered	Reduces defibrillator shock energy to nominal 50 Joules into a 50 ohm load.
Surface Area	Meets AAMI DF-80 guidelines.
Cable Length	Approximately 122 cm (48 inches).

Medical Control/Recording Features

Standard Event Review	Elapsed time and number of shocks are displayed on screen.
Enhanced Event Review	Optional data card (M3854A) expands the above on-screen event review capabilities. Review chronological events in detail including ECG. 8 hours of event and ECG recording or one hour if voice recording is activated.

FR2 Series Standard Battery (M3863A)

Type	12 VDC 4.2 Ah lithium manganese. Disposable, recyclable, long-life, primary cells.
Capacity	Minimum 300 shocks or 12 hours of operating time (EN 60601-2-4:2003).
Install-by Date	Battery is labeled with an install-by date at least 5 years from date of manufacture.
Standby Life	Defines how long the battery will power the AED in standby operation within the standby temperature range (one battery insert test and no uses). 4 years minimum when battery is installed by the install-by date (5 years typical).

Environmental/Physical Requirements

Sealing	Meets IEC529 class IP54 with battery and data card tray installed.
Temperature	Operating: 0° - 50° C (32° - 122° F) Standby: 0° - 43° C (32° - 109° F) Standby applies to AED with battery installed and stored with defibrillation pads.
Humidity	Operating: 0% to 95% relative humidity (non-condensing). Standby: 0% to 75% relative humidity (non-condensing).
Altitude	-500 to 15,000 feet per MIL-STD-810E 500.3 Procedure II.
Aircraft	Method: RTCA/DO-160D: 1997 Section 21 (Category M - Charging).
Shock/Drop Abuse Tolerance	1 meter any edge, corner or surface. MIL-STD-810E 516.4 Procedure IV.
Vibration	MIL-STD-810E 514.4-17
EMI	Requirements: Tested to EN60601-1-2 Limits. Radiated: Method EN55011: 1998 Group 1 Level B. Immunity: Method EN61000-4-3:1998 Level 2.

Automated and User-activated Self-tests

Automatic Self-tests	Tests internal circuitry, waveform delivery system, and battery capacity. Verifies calibration of key circuits monthly.
Automatic Self-test Frequency	Daily when stored within operating environmental conditions.
Status Indication	Dynamic visual and audible indication of self-test results. Indicates device readiness.
Battery Insertion Test	Upon battery insertion, extensive automatic self-tests and user interactive tests check device readiness. Verifies calibration of key circuits.
Automatic Standby Temperature Monitoring	Instrument automatically monitors temperature and warns user if device is stored outside of standby temperature range.

FR2+ Training and Administration Pack (M3864A)

Function	Places FR2+ in scenario-based training mode and disables energy delivery. 10 real-world scripts provided. Permits modification of preprogrammed FR2+ protocol.
Type	12 VDC 1.1 Ah Rechargeable Nickel Metal Hydride.
Capacity	Minimum 4 hours training time.
Recharge Time	90 minutes to full capacity using M3855A charger (sold separately).

340,000
deaths a year in the U.S., and hundreds of thousands more worldwide, are attributed to Sudden Cardiac Arrest.

With widespread access to defibrillators, an estimated 40,000 additional lives could be saved.

– American Heart Association

Philips Medical Systems is part of Royal Philips Electronics

Interested?

Would you like to know more about our innovative products? Please do not hesitate to contact us. We would be glad to hear from you.

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Philips–the trusted choice

- A Fortune Global 500 company, Philips is one of the world's largest medical products companies with annual revenue of over $7 billion.
- With over 350,000 automated external defibrillators installed, Philips is the leader in public access defibrillation.[7]
- Over 7 billion HeartStart Defibrillator service hours have been logged, with an additional 7 million added every day.
- Over 17% of Fortune 1000 companies, 8 out of 10 major airlines, and 43 professional sports teams rely on Philips HeartStart Defibrillators.

To learn more about the HeartStart FR2+ Defibrillator and Philips, call 1-800-453-6860 or visit www.philips.com/heartstart.

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Printed in the Netherlands
4522 962 16751 * JAN 2007