



**PHILIPS**

Automated  
External Defibrillator

HeartStart FRx

Side by side.  
Step by step.

Philips HeartStart FRx AED

# To help save a life

For trained emergency responders, there's nothing more important than saving time and saving lives. Because every second counts, the Philips HeartStart FRx AED is ready to go when you arrive on the scene.

- Automatic self-tests to ensure pad readiness
- Up to four years between battery replacements
- Convenient pre-connected SMART Pads II for both adults and children
- Sensors ensure that the right current is delivered to the heart on every needed shock
- Reliable performance, ease of use and a lightweight, rugged design that is built to withstand rough handling and extreme temperatures





Since Philips introduced the first biphasic waveform for an external defibrillator in 1996, biphasic therapy has gained acceptance and is now recognized as the standard of care. All presently available Philips HeartStart defibrillators incorporate a proprietary biphasic truncated exponential (BTE) waveform formulation employing high current delivered in a low-energy dosage. Further, Philips uses real-time impedance compensation to automatically adjust the waveform to deliver shock strength personalized to the needs of each patient, starting with the first shock.

### **Philips HeartStart FRx AED**

- Lightweight, rugged and reliable
- Patented Quick Shock feature allows the FRx to typically deliver a shock within eight seconds after CPR<sup>1</sup>
- Pre-connected SMART Pads II that can be used for both adults and children included; SMART Analysis automatically assesses heart rhythm and only delivers a shock if the victim's rhythm is determined to be treatable by the Philips advanced algorithm, even if the Shock button is pressed
- Series of automatic self-tests performed daily, weekly and monthly to check pad readiness and verify functionality and calibration of circuits and systems
- Optional Infant/Child Key; simply insert it and the defibrillator adjusts instruction and therapy, eliminating the need for additional infant/child pads
- CPR instructions for infants and children under 25 kg (55 lb) or 0-8 years old, and adults and children over 25 kg (55 lb) or greater than 8 years old; Infant/Child Key is available for purchase separately
- Easy setup, real-time metronome and clear, step-by-step voice commands paced to your actions

# Expert guidance. Intuitive support.



## The FRx makes training easy

Simply insert the Training Pads II (available separately) to temporarily disable the FRx's energy delivery capability and switch into training mode. Eight realistic SCA scenarios are designed to keep you and your team confident and prepared when the moment arises.

## Easy as 1-2-3



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.





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

Lightweight, rugged and reliable, the FRx can withstand rough handling, extreme temperatures, and dusty or wet surfaces. Designed for use in harsh settings, it can withstand up to 500 kg (1,100 lb) and drops from 1.2 m (4 ft).

### **Patented technology. Proven therapy.**

An audible metronome and CPR guidance assist the responder and real-time, step-by-step voice commands are available. When treating an infant or child, simply insert the optional Infant/Child Key and the FRx adjusts instructions and therapy.



### **Ease of use.**

Pre-connected SMART Pads II can be used for both adults and children. Once installed and activated, the FRx is easy to maintain. It performs a series of automatic self-tests daily, weekly and monthly to check pad readiness and verify functionality and calibration of circuits and systems. It can last up to four years between battery replacements.

# HeartStart FRx AED specifications

## Defibrillator

|                              |                                                                                                                                                                                                                                      |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Defibrillator family         | <b>Model number:</b> 861304<br>Includes defibrillator, battery, SMART Pads II (1 set), Setup and Maintenance Guides, Owner's Manual, Quick Reference Guide, date sticker                                                             |
| FRx Ready-Pack configuration | <b>Order Option:</b> R01<br>Includes 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                     | Biphasic truncated exponential; waveform parameters are automatically adjusted as a function of patient defibrillation impedance                                                                                                     |
| Therapy                      | <b>Adult defibrillation:</b> nominal peak current 32 A (150 J nominal into a 50 ohm load)<br><b>Pediatric defibrillation with optional FRx Infant/Child Key installed:</b> 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 Pro 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 provide 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   | 18 x 6 x 22 cm (7.1 x 2.4 x 8.8 in) H x D x W                 |
| Weight | Approximately 1.6 kg (3.5 lb) with battery and pads installed |

## Environmental/physical requirements

|                         |                                                                                                                                                                                                                               |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sealing                 | Waterjet-proof IPX5 per IEC60529<br>Dust-protected IP5X per IEC60529                                                                                                                                                          |
| Temperature             | <b>Operating/Standby:</b> 0° – 50° C (32° – 122° F)<br><b>Transient operating (for 20 minutes or less, after rapid transition from 20° C [68° F]):</b> -20 to 50° C (-4° to 122° F); under non-condensing humidity conditions |
| Altitude                | 0 to 4,572 m (0 to 15,000 ft)                                                                                                                                                                                                 |
| Aircraft                | Meets RTCA/DO-160 Section 21 (Category M – Radiated Emissions) and Section 20 (Category M – Conducted Immunity, and Category D – Radiated Immunity)                                                                           |
| Crush                   | 500 kg (1100 lb)                                                                                                                                                                                                              |
| Drop                    | Withstands 1.22 m (4 ft) drop on any edge, corner or face of the device onto masonry surface                                                                                                                                  |
| Vibration               | <b>Operating:</b> meets MILSTD 810G Fig. 5146E-1, random<br><b>Standby:</b> 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 Pro 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

|                 |                                                                                                               |
|-----------------|---------------------------------------------------------------------------------------------------------------|
| Item numbers    | <b>Standard:</b> M5070A<br><b>Aviation:</b> 989803139301 (TSO-C142, U.S. only)                                |
| Type            | 9 Volt DC, 4.2 Ah, lithium manganese dioxide, disposable long-life primary cell                               |
| Capacity        | When new, a minimum of 200 shocks or 4 hours of operating time at 25° C (77° F)                               |
| Install-by date | Battery is labeled with an install-by date of at least five years from date of manufacture                    |
| Standby life    | Typically, four years when stored and maintained according to directions provided in the Instructions for Use |

### SMART Pads II

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

### Training Pads II

|             |                                                                                                                                        |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Item number | 989803139271                                                                                                                           |
| Function    | Special pads place the 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    |

## References

1. Nichol G, Sayre MR, Guerra F, and Poole J. Defibrillation for Ventricular Fibrillation: A Shocking Update. Journal American College of Cardiology. 2017;70(12):1496–1509. DOI: 10.1016/j. jacc.2017.07.778.



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