ALS life support on the run

Philips M3536A HeartStart MRx ALS Monitor

The first thing you'll notice about the HeartStart MRx is its large, color display. Look further and you'll see that it has much more. This combination multi-parameter monitor with 12-lead ECG acquisition/transmission capability, defibrillator, and AED, unites Philips' industry-leading monitoring and display technologies with superior diagnostic measurements, Vital Signs Trending reports, Event Summaries, suite of data transmission options and our patented resuscitation therapies.

Monitoring starts once a patient cable is connected to the device. Equipped for 3- and 5-Lead ECG monitoring with arrhythmia detection, and optional 12-Lead ECG, pulse oximetry, noninvasive blood pressure, invasive pressures, temperature and end-tidal CO_2, HeartStart MRx is prepared for today's needs and upgradeable to meet tomorrow's.

Its therapies - manual and semi-automatic defibrillation and synchronized cardioversion - feature Philips' patented low-energy SMART Biphasic waveform, which is proven effective in emergency resuscitation and for minimizing post-resuscitation heart dysfunction. No other external defibrillation waveform is supported by more peer-reviewed clinical data. Transcutaneous pacing can be added and the MRx will pace in either demand or fixed mode.

To help caregivers perform high-quality CPR, the Q-CPR® option is available. It offers real-time, measurement and corrective feedback on the rate, depth, and duration of compressions, as well as the frequency of ventilations. It also provides notification of lack of CPR activity. Now with the CPR meter, feedback appears on a graphical display right in the line of site of the caregiver performing CPR.

HeartStart MRx displays measurements and patient care data on an easy-to-read, backlit, 8.4-inch screen. Numerics and waveforms can be reconfigured, and the screen reorganized, enabling you to quickly locate the information you need most. With wide viewing angles, it displays an event timer, event markers, numeric vital signs, and up to four waves, as well as text prompts, alarms, and battery status indicators. On-screen menus simplify navigation for configuring data, setting and responding to alarms, and accessing additional functionality. Automated self-tests, straight-forward ready-for-use checks, data collection, and two long-life batteries make the device easy to operate.

All of these features, measurements, and therapies, plus its compact size, low weight (13.2 lbs./5.9 kg), and balanced shape mean that HeartStart MRx has the capabilities you need and the performance you demand for rapid intervention, thorough care, and positive patient outcomes – that's the big picture.

Features

Standard Features

- ST/AR Basic algorithm for arrhythmia detection
- ECG monitoring through monitoring electrodes and defibrillation pads
- Synchronized cardioversion
- Adjustable ECG size and autogain
- Manual and AED operation
- SMART Biphasic waveform for defibrillation therapy
- Large 4-wave color display
- Strip chart printer
- Individual, adjustable volume of QRS beeper, voice prompts, and alerts
- Event summary
- Vital Signs Trending Report
- Configuration mode
- Service mode
- Operational checks
- Automated self-tests with "ready-for-use" indicator
- Lithium ion battery with fuel gauge

Optional Features

- SpO_2 with Fourier Artifact Suppression Technology (FAST)
- Noninvasive Blood Pressure
- Invasive Pressures (2 channels)
- Temperature
- Microstream™ $EtCO_2$
- Noninvasive Pacing
- 12-Lead ECG with Philips DXL algorithm
- 12-Lead ECG Transmission
- 75 mm Printer
- Q-CPR CPR measurement and feedback
- Q-CPR Data Capture
- ACI-TIPI and TPI analysis
- Periodic Clinical Data Transmission
- Batch LAN Data Transfer (via LAN cable)

Standard Accessories

- Lithium ion battery with fuel gauge
- Hands-free multifunction electrode cable
- 5-Lead ECG cable
- Disposable monitoring electrodes
- Printer paper
- Carrying case
- Defibrillator test load
- Documentation CD containing Instructions for Use, User training workbook and Application notes
- Quick reference cards

M3536A   HeartStart MRx ALS Monitor

A01	SpO_2
A02	SpO_2 and NBP
A03	SpO_2, NBP, and $EtCO_2$
A04	$EtCO_2$
A05	SpO_2, NBP, $EtCO_2$ and Temperature
A06	SpO_2, NBP, $EtCO_2$, Invasive Pressures and Temperature
A07	SpO_2, NBP, Invasive Pressures and Temperature
A11	$EtCO_2$ and SpO_2
B01	External Pacing
B02	12-Lead ECG Acquisition
B04	75 mm Printer
B05	Asian 75mm Printer
B06	12-Lead ECG Transmission - Bluetooth® wireless technology
B07	12-Lead ECG Transmission - RS232 and Bluetooth
B08	Q-CPR
B09	Q-CPR Data Capture
B10	Event Summary - Bluetooth
B11	12-Lead Transmission, Rosetta-Lt™ Interface (Available in the U.S. only)

B12	Batch LAN Data Transfer
B14	Audio Recording (all modes)
B17	ACI-TIPI and TPI
B18	Periodic Clinical Data Transmission
C02	Water Resistant External Paddles
C03	Data Card
C05	Additional Battery
C06	AC Power Module
C07	Barrel style Pad Cable (Replacement for Standard Pad Cable)
C10	5/5 ECG lead set with grabbers
C11	Long (2.7m) ECG Trunk Cable
C12	3/7-Snap Lead set
LP1	Instructions for Use (printed copy)
LP2	User Training Video (English only)
LP3	User Training DVD (English only)
SM1	Service Manual (English only)
SM3	Service Training Video (DVD, English only)
W01	One-Year On-Site Warranty
WA2	Three-Year Biomed Warranty (U.S., Canada, and Australia only)
W22	Two-Year Bench Warranty with Loaner (U.S. and Canada only)

Some options, upgrades and accessories are not available in all countries
Contact your local Philips Sales Representative for specific information

861325	Event Summary, Bluetooth
861326	12-Lead Transmission, Rosetta-Lt Interface (Available in the U.S. only)
861359	Invasive Pressures
861360	Temperature
861442	ACI-TIPI and TPI
861443	Periodic Clinical Data Transmission
861444	CPR meter
861447	Batch LAN Data Transfer
989803153411	Internal Bluetooth Card
M3530A	SpO_2
M3531A	NBP
M3532A	$EtCO_2$
M3533A	Pacing
M3534A	12-Lead ECG
	Option B02 - Acquisition
	Option B04 - 75 mm Printer
M3801A	12-Lead Transmission (Bluetooth)
M3802A	12-Lead Transmission (RS232 and Bluetooth)
M3806A	Device Software
M3808A	Therapy PCA
M4760A	Handle and Cap Plate (for Pads)
M4765A	Option BO2 - B-Level Hardware Upgrade
M4770A	Q-CPR CPR Measurement and Feedback
M4771A	Q-CPR Data Capture Upgrade
M4772A	Audio Recording Upgrade
M5527A	External Paddles with Paddle Tray
	Option C02 - Water Resistant Paddles

M3543A	Water Resistant External Paddles

Multifunction Electrode Pads

M3501A	Defib Adult, AAMI
M3502A	Defib Adult, IEC
M3503A	Defib Pediatric, IEC
M3504A	Defib Pediatric, AAMI

M3713A	Adult Plus
M3716A	Adult Radiolucent
M3717A	Pediatric Plus
M3718A	Adult Radiotransparent/Reduced Skin
M3719A	Pediatric Radiotransparent/Reduced Skin

M3507A	Defib Hands-free, barrel style 7 ft. (2.2 m)
M3508A	Defib Hands-free, plug style 7 ft. (2.2 m)
05-10200	Pads Adapter (use with M3507A)
989803158661	Defibrillator Pads Hands-Free Cable, HeartStart pads, CPR meter cable and connector

989803162401	CPR meter
989803163291	CPR meter Adhesive Pads
989803158661	Pads/CPR meter Cable
M4761A	Compression Sensor
M4762A	Sensor Adhesive Pads (Package of 10)
M4763A	Compression Sensor Pads/CPR cable

M2202A	High-Tack Foam, 5 electrodes/pack (60 packs/case)
M4612A	Solid Gel Electrodes, 5 electrodes/pack (60 packs/case)
M4613A	Solid Gel Electrodes, 30 electrodes/pack (10 packs/case)

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M3525A	2.7 meter 10-lead ECG Trunk Cable, 12-pin Connector (for 3-Lead, 5-Lead and 12-Lead use)
989803147691	1.3 meter 10-lead ECG Trunk Cable, 12-pin Connector (for 3-Lead, 5-Lead and 12-Lead use)
M3526A	3-lead ECG Set and Plug with Snap (AAMI)
M3527A	Add 7-lead ECG Set for 12-Lead use (AAMI)
M3528A	3-lead ECG Set and Plug with Snap (IEC)
M3529A	Add 7-lead ECG Set for 12-Lead use (IEC)
M5530A	Combiner Plug for 3-wire Lead Set for use with M3526A/M3528A
M1663A	10-Lead ECG Patient Trunk Cable, 12-pin ECG Input Connector (for 5-Lead and 12-Lead use)
M1949A	10-lead ECG Patient Trunk Cable, 12-pin ECG Input Connector (for 5-Lead and 12-Lead use)
M1968A	10-electrode Cable Set, Extremities, Grabber (use with M1976A) (AAMI)
M1976A	10-electrode Cable Set, Chest, Grabber (use with M1968A) (AAMI)
M1971A	10-electrode Cable Set, Extremities, Grabber (use with M1978A) (IEC)
M1978A	10-electrode Cable Set, Chest, Grabber (use with M1971A) (IEC)
989803158061	5-Lead ECG Lead Set; Limb Leads; Snaps; Shielded Electrode (AAMI)
989803158071	5-Lead ECG Lead Set; Chest Leads; Snaps; Shielded Electrode (AAMI)
989803158081	5-Lead ECG Lead Set; Limb Leads; Snaps; Shielded Electrode (IEC)
989803158091	5-Lead ECG Lead Set; Chest Leads; Snaps; Shielded Electrode (IEC)

M1669A	3-Lead Trunk Cable
M1500A	3-Lead ECG Trunk Cable (AAMI)
M1605A	3-Lead ECG Snaps (AAMI)
M1510A	3-Lead ECG Trunk Cable (IEC)
M1615A	3-Lead ECG Snaps (IEC)
M1671A	3-Lead ICU Grabber (AAMI)
M1673A	3-Lead ICU Snaps (AAMI)
M1674A	3-Lead ICU Snaps (IEC)
M1675A	3-Lead OR Grabber (AAMI)
M1678A	3-Lead OR Grabber (IEC)
M1672A	3-Lead ICU Grabber (IEC)

M1668A	5-Lead Trunk Cable
M1520A	5-Lead ECG Trunk Cable (AAMI)
M1625A	5-Lead ECG Snaps (AAMI)
M1530A	5-Lead ECG Trunk Cable (IEC)
M1635A	5-Lead ECG Snaps (IEC)
M1968A	5-Lead ICU Grabber (AAMI)
M1971A	5-Lead ICU Grabber (IEC)
M1644A	5-Lead ICU Snaps (AAMI)
M1645A	5-Lead ICU Snaps (IEC)
M1973A	5-Lead OR Grabber (AAMI)
M1974A	5-Lead OR Grabber (IEC)
M1976A	5-Lead Chest ICU Grabber (AAMI)
M1978A	5-Lead Chest ICU Grabber (IEC)
M1979A	5-Lead Chest OR Grabber (AAMI)
M1984A	5-Lead Chest OR Grabber (IEC)
M1602A	5-Lead Chest ICU Snaps (AAMI)
M1604A	5-Lead Chest ICU Snaps (IEC)

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M1191A	Reusable SpO_2 Sensor - Adult Finger (2 m)
M1191AL	Reusable SpO_2 Sensor - Adult Finger (3 m)
M1191B	Reusable SpO_2 Sensor - Adult Finger (2 m)
M1191BL	Reusable SpO_2 Sensor - Adult Finger (3 m)
M1191T	Reusable Adult Finger Sensor (Nellcor® 9-pin D-sub connector)
M1192A	Reusable SpO_2 Sensor-Pediatric/Small Adult Finger
M1192T	Reusable Pediatric Finger Sensor (Nellcor® 9-pin D-sub connector)
M1194A	Reusable SpO_2 Sensor - Adult Ear Clip
M1195A	Reusable SpO_2 Sensor - Infant
M1196A	Reusable Clip Adult Sensor
M1196T	Reusable Clip Adult Sensor (Nellcor 9-pin D-sub connector)
M1941A	SpO_2 Extension Cable, 2 m (6.5 ft.)
M1943A	1m Nellcor adapter
M1131A	Disposable SpO_2 Sensor - Adult/Pediatric

NBP
Interconnect Cable

M1598B	Adult Pressure 5 ft. (1.5 m)
M1599B	Adult Pressure 10 ft. (3 m)

Reusable NBP Cuff Kit

40400A	Reusable NBP Cuff Kit, 3 sizes (pediatric, adult, large adult)
40400B	Reusable NBP Cuff Kit, 5 sizes (infant, pediatric, adult, large adult, thigh)
40401A	Traditional Reusable NBP Cuff - Infant
40401B	Traditional Reusable NBP Cuff - Pediatric
40401C	Traditional Reusable NBP Cuff - Adult
40401D	Traditional Reusable NBP Cuff - Large Adult
40401E	Traditional Reusable NBP Cuff - Thigh
M4552B	Easy Care Reusable NBP Cuff - Infant
M4553B	Easy Care Reusable NBP Cuff - Pediatric
M4554B	Easy Care Reusable NBP Cuff - Small Adult
M4555B	Easy Care Reusable NBP Cuff - Adult
M4557B	Easy Care Reusable NBP Cuff - Large Adult
M4559B	Easy Care Reusable NBP Cuff - Thigh
M1572A	Multi-Patient Comfort Cuffs - Pediatric
M1573A	Multi-Patient Comfort Cuffs - Small Adult
M1574A	Multi-Patient Comfort Cuffs - Adult
M1575A	Multi-Patient Comfort Cuffs - Large Adult

NBP
Disposable Cuffs

M4572B	Soft Single-Patient Disposable Cuff - Infant
M4573B	Soft Single-Patient Disposable Cuff - Pediatric
M4574B	Soft Single-Patient Disposable Cuff - Small Adult
M4575B	Soft Single-Patient Disposable Cuff - Adult
M4576B	Soft Single-Patient Disposable Cuff - Adult X-Long
M4577B	Soft Single-Patient Disposable Cuff - Large Adult
M4578B	Soft Single-Patient Disposable Cuff - Large Adult X-Long
M4579B	Soft Single-Patient Disposable Cuff - Thigh

Invasive Pressures

CPJ840J6	Reusable Pressure Transducer
CPJ84022	Sterile disposable pressure dome for use with CPJ840J6
CPJ84046	Transducer holder for CPJ840J6
M1567A	Single channel disposable blood pressure kit (Available in Europe and Asia only)
M1568A	Dual Line blood pressure kit for measuring CVP, ABP and other pressure measurements (available in Europe and Asia only)
M1634A	Reusable adapter cable (available in Europe and Asia only)

Other*

TransPac® IV	ICU Medical, Inc.
TruWave® PX212	Edwards Lifescience
DTX Plus™ DT-4812	Becton, Dickinson and Co.

* Available for purchase/service from their respective manufacturers.

Temperature

21090A	Esophageal/rectal
21091A	Skin surface
21093A	Esophageal stethoscope
21094A	Esophageal stethoscope
21095A	Esophageal stethoscope
21096A	Foley Catheter
21097A	Foley Catheter
M1837A	Esophageal/rectal
M2255A	Foley Catheter
21075A	Esophageal/rectal - adult
21076A	Esophageal/rectal - pediatric
21078A	Skin surface
21082A	3.0 m 2-pin plug extension cable for minim phone plug
21082B	1.5 m 2-pin plug extension cable for minim phone plug

EtCO₂

M1920A	FilterLine® Set - Adult/Pediatric (25 sets/case)
M1921A	Filter H Set - Humidified Adult/ Pediatric (25 sets/case)
M1923A	Filter H Set - Humidified Infant/ Neonatal (yellow, 25 sets/case)
M2520A	Smart CapnoLine™ - Pediatric
M2522A	Smart CapnoLine - Adult
M2524A	Smart CapnoLine - Pediatric
M2526A	Smart CapnoLine - Adult

M3538A	Lithium Ion Battery with fuel gauge
M3539A	AC Power Module
M5529A	DC Power Module
M5528A	DC Power Module Mounting Bracket
989803135301	2-Bay Battery Support System for Lithium Ion Batteries
989803135331	4-Bay Battery Support System for Lithium Ion Batteries
989803135341	4-Bay Battery Support System for Sealed Lead Acid and Lithium Ion Batteries
40457C	50 mm Chemical Thermal, Gray Grid (10 rolls)
40457D	50 mm Chemical Thermal, Gray Grid (80 rolls)
989803138171	75 mm Chemical Thermal, Red Grid (10 rolls)
989803138181	75 mm Chemical Thermal, Red Grid (80 rolls)
M1781A	Test Load for use with M3507A Pad Cable
M3725A	Test Load for use with M3508A Pad Cable
M3541A	Carrying Case (includes 3 accessory pouches and shoulder strap)
989803146981	Data Card and Tray
M5528A	Vehicle Wall Mount
M3537A	Bedrail Hook mount
M3549A	Wide Bedrail Hook mount
M4737A	Display cover

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Specifications

Defibrillator

Waveform: Biphasic Truncated Exponential. Waveform parameters adjusted as a function of patient impedance
Shock Delivery: Via multifunction electrode pads, or paddles

Delivered Energy Accuracy:

Selected Energy	Nominal Delivered Energy vs. Patient Impedance							Accuracy
	Load Impedance							
	25	50	75	100	125	150	175	
1 J	1.2	1.3	1.2	1.1	1.0	0.9	0.8	±2 J
2 J	1.8	2.0	2.0	1.9	1.7	1.6	1.5	±2 J
3 J	2.8	3.0	3.0	3.1	3.0	2.9	2.7	±2 J
4 J	3.7	4.0	4.0	4.1	4.2	4.2	4.0	±2 J
5 J	4.6	5.0	5.1	5.1	5.2	5.2	5.0	±2 J
6 J	5.5	6.0	6.1	6.2	6.3	6.3	6.1	±2 J
7 J	6.4	7.0	7.1	7.2	7.3	7.3	7.1	±2 J
8 J	7.4	8.0	8.1	8.2	8.4	8.3	8.1	±2 J
9 J	8.3	9.0	9.1	9.3	9.4	9.4	9.1	±2 J
10 J	9.2	10	10	10	10	10	10	±2 J
15 J	14	15	15	15	16	16	15	±15%
20 J	18	20	20	21	21	21	20	±15%
30 J	28	30	30	31	31	31	30	±15%
50 J	46	50	51	51	52	52	50	±15%
70 J	64	70	71	72	73	73	71	±15%
100 J	92	100	101	103	104	104	101	±15%
120 J	110	120	121	123	125	125	121	±15%
150 J	138	150	152	154	157	156	151	±15%
170 J	156	170	172	175	177	177	172	±15%
200 J	184	200	202	206	209	209	202	±15%

Charge Time: Less than 5 seconds to 200 joules with a new, fully charged Lithium Ion battery pack at 25°C.

Patient Impedance Range

Minimum: 15 ohm (internal defibrillation);
25 Ohm (external defibrillation)
Maximum: 180 ohm

Note: Actual functional range may exceed the above values

General

Dimensions with pads:	12.4 in. (W) x 8.3 in. (D) x 11.7 in. (H) (31.5 cm x 21.0 cm x 29.5 cm)
Dimensions with paddles:	13.4 in. (W) x 8.3 in. (D) x 13.6 in. (H) (34.0 cm x 21.0 cm x 34.5 cm)
Weight:	13.2 lbs. (5.99 kg) including pads, pads cable, full roll of paper, and battery. Incremental weight of external standard paddles and paddle tray is 2.5 lbs. (1.1 kg). Additional battery weighs less than 1.8 lbs. (0.82 kg)

Manual Output Energy (Selected):	1-10, 15, 20, 30, 50, 70, 100, 120, 150, 170, 200 joules
Controls:	On/Off Therapy Knob, Charge, Shock, Sync, Print, Mark Event, ECG Lead Select, Alarm Pause, Event Review, Disarm
Energy Selection:	Front panel Therapy Knob
Charge Control:	Front panel button; button on external paddles
Shock Control:	Front panel button; buttons on external or switched internal paddles
Synchronized Control:	Front panel SYNC button
Indicators:	Text prompts, audio alerts, QRS beeper, battery status, Ready For Use, external power, Sync mode
Armed Indicators:	Charging tone, charged tone, flashing Shock button, and energy level indicated on display

AED Energy Profile:	150 joules nominal into a 50 ohm test load
Text and Voice Prompts:	Extensive text/audible messages guide user through configured protocol
AED Controls:	On/Off, Shock
Indicators:	Monitor display messages and prompts, voice prompts, battery status, Ready For Use, external power
Armed Indicators:	Charging tone, charged tone, flashing Shock button, energy level indicated on display, and voice prompts
ECG Analysis:	Evaluates patient ECG and signal quality to determine if a shock is appropriate and evaluates connection impedance for proper defibrillation pad contact
Shockable Rhythms:	Shockable Rhythms: Ventricular fibrillation and certain ventricular tachycardias, including ventricular flutter and polymorphic ventricular tachycardia

Shock Advisory Algorithm Sensitivity and Specificity:	Meets AAMI DF-39

ECG and Arrhythmia Monitoring

Inputs:	Up to four (4) ECG waves may be viewed on display and up to 2 waves printed simultaneously. Lead I, II, or III is obtained through the 3-lead ECG cable and separate monitoring electrodes. With a 5-lead cable, leads aVR, aVL, aVF, and V can also be obtained. Pads ECG is obtained through 2 multifunction electrode pads.
Lead Fault:	Leads Off message and dashed line appear on the display if an electrode or lead becomes disconnected. Lead Off indicator in wave sector
Pad Fault:	Dashed line appears on the display if a pad becomes disconnected.
Heart Rate Display:	Digital readout on display from 15 to 300 bpm, with an accuracy of ±10%
Heart Rate/ Arrhythmia Alarms:	HR, Asystole, VFIB/VTACH, VTACH, Extreme Tachy, Extreme Brady, PVC rate, Pacer not capture, Pacer not pacing
ECG Cable Length:	9 ft. (2.7 m)
Common Mode Rejection:	Greater than 90 dB measured per AAMI standard for cardiac monitors (EC 13)
ECG Size:	2.5, 5, 10, 20, 40 mm/mV, autogain

AC Line Filter:	60 Hz or 50 Hz

3-lead, 5-lead, and Pads:	Pads ECG for Display: Monitor (0.15-40 Hz) or EMS (1-30 Hz) Pads ECG for Printer: Monitor (0.15-40 Hz) or EMS (1-30 Hz) Leads ECG for Display: Monitor (0.15-40 Hz) or EMS (1-30 Hz) Leads ECG for Printer: Diagnostic (0.05-150 Hz) or Monitor (0.15-40 Hz) or EMS (1-30 Hz)
12-lead:	ECG for Display: (0.05 - 150 Hz), (0.05 - 40 Hz), (0.15 - 40 Hz) ECG for Report: (0.05 - 150 Hz), (0.05 - 40 Hz), (0.15 - 40 Hz), (0.05 - 150 Hz)

ECG:	Type CF
SpO_2:	Type CF
$EtCO_2$:	Type CF
NBP:	Type CF
Invasive Pressures:	Type CF
Temperature:	Type CF
External Defib:	Type BF
Internal Defib:	Type CF

Size:	8.4 in. diagonal (128 mm x 171 mm)
Type:	TFT Color LCD
Resolution:	640 x 480 pixels (VGA) Sweep Speed: 25 mm/s nominal (stationary trace; sweeping erase bar) for ECG, Invasive Pressures and SpO_2; 6.25 mm/s for CO_2
Wave Viewing Time:	5 seconds (ECG)

Type:	Rechargeable, Lithium Ion; minimum 6.45 Ah, 14.4 V, 92 WH
Dimensions:	6.5 in. (H) x 3.8 in. (W) x 1.6 in. (D) (165 mm x 95 mm x 42 mm)
Weight:	Less than 1.8 lb. (0.82 kg)
Charge Time:	Approximately 3 hours to 100%. Approximately 2 hours to 80%, indicated by battery fuel gauge. Charging the battery at temperatures above 45°C may degrade battery life.

Capacity:	At least 5 hours of monitoring with ECG, SpO_2, CO_2, temperature, and 2 invasive pressures monitored continuously, NBP measured every 15 minutes, and 20 200-joule discharges (with a new, fully charged battery at room temperature, 25° C). At least 3.5 hours while pacing at 180 ppm at 160 mA and monitoring as described above
Battery Indicators:	Fuel gauge on battery, capacity indicator on display; flashing RFU indicator, chirp, and LOW BATTERY message appears on display for low battery condition*
Storage:	Storing the battery for extended periods at temperatures above 40°C will reduce battery capacity and degrade battery life.

* Low battery condition triggered with at least 10 minutes of monitoring time and 6 maximum energy discharges remain (with a new battery at room temperature, 25°C)

Continuous ECG Strip:	The Print key starts and stops the strip. The printer can be configured to run real time or with a 10-second delay. The strip prints the primary ECG lead with event annotations and measurements.
Auto Printing:	The printer can be configured to automatically print on Marked Events, Charge, Shock, and Alarm. When an alarm condition occurs, the unit prints the primary ECG wave and the alarming wave, if configured.
Reports:	The following reports can be printed: Event Summary, Vital Signs Trending, 12-Lead, Operational Check, Configuration, Status Log, and Device Information
Speed:	25 or 50 mm/s with an accuracy of ± 5%
Amplitude Accuracy:	± 5% or ± 40 uV, whichever is greater
Paper Size:	50 mm (W) by 30 m (100 ft.) (L) 75 mm (W) by 30 m (100 ft.) (L)

Waveform:	Monophasic Truncated Exponential
Current Pulse Amplitude:	10 mA to 175 mA (5 mA increments); accuracy 10% or 5 mA, whichever is greater
Pulse Width:	40 ms with ± 10% accuracy
Rate: 30 ppm to 180 ppm (10 ppm increments);	accuracy ± 1.5%
Modes:	Demand or Fixed Rate
Refractory Period:	340 msec (30 to 80 ppm); 240 msec (90 to 180 ppm)

SpO₂ Pulse Oximetry

SpO$_2$ Range:	0-100%
Pulse rate:	30 to 300 bpm
Maximum Power Output:	< 15 mW
Wavelength Range:	500 - 1000 nm
Resolution:	1%
Display Update Period:	1 sec. typical numeric update rate

Accuracy with:

M1191A sensor - 1 standard deviation 70% to 100%, ± 2.0%

M1191B sensor - 1 standard deviation 70% to 100%, ± 2.0%

M1191AL sensor - 1 standard deviation 70% to 100%, ± 2.0%

M1191BL sensor - 1 standard deviation 70% to 100%, ± 2.0%

M1191T sensor - 1 standard deviation 70% to 100%, ± 2.0%

M1192A sensor - 1 standard deviation 70% to 100%, ± 2.0%

M1192T sensor - 1 standard deviation 70% to 100%, ± 2.0%

M1194A sensor - 1 standard deviation 70% to 100%, ± 3.0%

M1195A sensor - 1 standard deviation 70% to 100%, ± 3.0%

M1196A sensor - 1 standard deviation 70% to 100%, ± 3.0%

M1196T sensor - 1 standard deviation 70% to 100%, ± 3.0%

M1131A sensor - 1 standard deviation 70% to 100%, ± 3.0

Pulse Rate Accuracy: 2% or 1 bpm (whichever is greater)

Pulse Alarm Range:

Low Limit: 30 to 195 (adults); 30 to 235 (pediatric)

High Limit: 35 to 200 (adult); 35 to 240 (pediatric)

SpO$_2$ Alarm Range:

Low Limit: 50 to 99% (Adult/Pediatric)

High Limit: 51 to 100% (Adult/Pediatric)

SpO₂ Pulse Oximetry

SpO$_2$ and Pulse High/Low Alarm Signal Generation Delay: 10 seconds

Note: The above referenced sensors were validated for use with the HeartStart MRx using the Philips picoSAT II SpO$_2$ module with Fourier Artifact Suppression Technology (FAST). This module is not available as a stand-alone device.

Noninvasive Blood Pressure

Systolic:	40-260 mmHg
Diastolic:	20-200 mmHg
Initial Pressure:	160 mmHg (Adult); 120 mmHg (Pediatric)
Maximum Pressure:	280 mmHg
Overpressure Safety Limits:	Maximum of 300 mmHg
Cuff Inflation Time:	75 second maximum (pediatric or adult)
Pressure Transducer Accuracy:	±3 mmHg

Systolic high limit:	35 - 270 (Adult), 35 - 180 (Pediatric)
Systolic low limit:	30 - 265 (Adult), 30 - 175 (Pediatric)
Diastolic high limit:	15 - 245 (Adult), 15 - 150 (Pediatric)
Diastolic low limit:	10 - 240 (Adult), 10 - 145 (Pediatric)
Mean high limit:	25 - 255 (Adult), 25 - 160 (Pediatric)
Mean low limit:	20 - 250 (Adult), 20 - 155 (Pediatric)
Calibration schedule:	yearly or every 10,000 cycles
Auto Mode Repetition Time:	1, 2.5, 5, 10, 15, 30, 60, or 120 minutes
Measurement Time:	Auto/manual mode: 30 seconds (average) @ HR > 60 bpm, 170 seconds (maximum)
Interconnect Tube Length:	M1598B Connect tubing 5 ft. (1.5 m) M1599B Connect tubing 10 ft. (3 m)

Range:	0 to 99 mmHg at sea level
Resolution:	1mmHg (0.1 kPa)
Accuracy:	For values between 0 and 38 mmHg: ± 2 mmHg.
	For values between 39 and 99 mmHg: ± 5% of reading + 0.08% for every 1 mmHg (above 40 mmHg). For breath rates above 80 and $EtCO_2$ values >18 mmHg, accuracy is 4 mmHg or ± 12% of reading, whichever is greater.
Alarm Range:	Low Limit: 10 to 94 mmHg (Adult/Pediatric)
	High Limit: 20 to 95 mmHg (Adult/Pediatric)
Calibration schedule:	yearly or every 4,000 hours
Sample Size:	50 ml per min
Drift of Measurement Accuracy:	Over a 24-hour period, accuracy claims above are maintained.

Range:	0 to 150 rpm
Resolution:	1 rpm
Accuracy:	0 to 40 rpm ±1 rpm
	41 to 70 rpm ±2 rpm
	71 to 100 rpm ± 3 rpm
	101 to 150 rpm ± 5 rpm
Alarm Range:	Low Limit: 0 to 99 rpm (Adult/Pediatric)
	High Limit: 10 to 100 rpm (Adult/Pediatric)
	Apnea Alarm Time: 10-40 seconds, in increments of 5

Ingredients:	5% Carbon Dioxide, 21% Oxygen, 74% Nitrogen
Cylinder Size:	BD
Method of Preparation:	Gravimetric
Blend Tolerance:	0.03%
Accuracy:	0.03% absolute
Moisture:	10 PPM Maximum
Expiration Period:	2 years
Pressure:	144 PSIG, Volume: 10L

Transducer Sensitivity:	5uV/V mmHg (37.5uV/V/kPa)
Sensitivity Adjustment Range:	± 10%
Transducer Load Resistance:	195 to 2200 ohms
Transducer Output Resistance:	0 to 3000 ohms
Frequency Response:	0-12 Hz or 0-40 Hz
Zero Adjustment Range:	± 200 mmHg (±26.7 kPa)
Zero Adjustment Accuracy:	± 1.0 mmHg (±0.1 kPa)
Zero Setting Drift:	<0.1 mmHg/°C (0.013 kPa/°C)
Gain accuracy (excluding transducers):	± 1% of reading or 1 mmHg (0.1 kPa) whichever is greater
Gain Drift:	less than 0.05% / °C
Overall Accuracy (included listed transducers):	± 4% of reading or 4mmHg (0.5kPa) whichever is greater
Measurement Range:	-40 to 361 mmHg (-5.3 to 48.1 kPa)
Measurement Resolution:	1mmHg (0.1 kPa)
Noise:	<1mmHg (0.1 kPa)
Transducer/Dome Volume Displacement:	Refer to the specific device's specifications.
Additional Noise from EMI if operating under conditions according to EMC standard EN60601-1-2 (Radiated Immunity 3 V/m or Conducted Immunity 3 VRMS):	<3mmHg
Pulse Rate Range:	25-350 bpm
Pulse Rate Accuracy:	1% of full range
Pulse Rate Resolution:	1 bpm

Measurement Range:	0°- 45°C (32° - 113°F)
Measurement Resolution:	0.1°C (0.2°F)
Measurement Accuracy (excluding any adapter cable):	+0.1°C from 25°C to 45°C; +0.3°C from 0°C to 24.9°C
Settling Time Constant:	<10 seconds

| Averaging Time: | 1 second |
| Minimum measurement time: | See the probe's Instructions for Use to obtain minimum measurement times for accurate readings. The HeartStart MRx does not add any clinically significant time to obtain accurate readings. |

Inputs: With a 10-Lead cable, leads I, II, III, aVR, aVL, aVF, V/C1-V/C6 can be obtained. All 12-Lead ECG waves can be viewed on the display simultaneously. All 12 leads can be printed on the strip chart printer in 3x4 format.

ECG Bandwidth Filters:	0.15 - 40 Hz
	0.05 - 40 Hz
	0.05 - 150 Hz

Cellular transmission via a device with Bluetooth® wireless technology or a cell phone with an RS-232 connection. 12-Lead ECGs are transmitted through an ISP to the 12-Lead Transfer Station.

Bluetooth wireless transmission to an external computer which supports File Transfer Profile Server 1.1 Two-way radio transmission of 12-Lead ECGs in conjunction with General Devices' Rosetta-Lt device. Destinations: Once a 12-lead reaches the 12-Lead Transfer Station, it can be displayed, printed, faxed, emailed, or forwarded to another 12-Lead Transfer Station. It can also be forwarded to the TraceMaster ECG Management System or other ECG management systems (via the DatamedFT).

| Internal Event Summary: | The internal Event Summary stores up to 12 hours of 2 continuous ECG waves, 1 CO_2 wave and 2 invasive pressure waves, events and trending per event summary. There is a maximum capacity of 55 Event Summaries or 240 megabytes (62 megabytes is you have a 64 megabyte card installed) of patient data, whichever comes first. |

| Data Card Event Summary: | The Data Card has a maximum capacity of 60 Event Summaries or 240 megabytes (62 megabytes is you have a 64 megabyte card installed) of patient data, whichever comes first. |

Q-CPR

Compressions:	Depth, rate, release (complete or incomplete), and duty cycle
Ventilations:	Volume, rate, and inflation time
Verbal:	Prioritized, corrective, verbal feedback for all measurements
Numerical:	Measurement values for compression rate, ventilation rate, and no flow time
Graphical:	Compression wave with correct depth target zone. Lung icon for ventilation volume.
User Interface:	Integrated into Code (ALS resuscitation) and AED (BLS resuscitation) views

CPR Meter

Dimensions:	154mm x 64mm x 28mm) with a .91m integrated cable.
Weight:	6 oz. (170 g)
Input voltage:	4.0-6.0V at 170mA. The CPR meter is electrically and galvanically isolated from the defibrillator power and communication sources.

| Storage: | -20°C to 60°C (-4°F to 140°F) |
| Operating: | 0°C to 50°C (32°F to 122°F) |

Storage:	0% to 75% Operating: 0% to 95%
Solids/Water Resistance:	IP55. Meets ISO/IEC 60529
EMC:	Meets IEC 60601-1-2 and RTCA/ DO-160E

Dimensions:	39mm x 90 mm

Storage:	-20°C to 60°C (-4°F to 140°F)
Operating:	0°C to 50°C (32°F to 122°F)

Storage:	0% to 75%
Operating:	0% to 95%
Material:	Foam pad with biocompatible adhesive on both sides
Shelf life:	2 years when applied to the CPR meter or 4 years in an unopened package

Bluetooth Class I:	100 meters (approximately 300 feet) maximum transmission range. Dependent upon transmission range of lowest class Bluetooth device. Most Bluetooth devices are Class II, which transmit at maximum ranges of up to 10 meters (33 feet).
Bluetooth Stacks:	Tested with Toshiba™ 4.20.11, IVT™ 2.1.2.0 (Product)/05.04.11.20060301 (stack), Widcomm™ 4.0.1.2400.
Bluetooth Version:	1.1 or greater

Bluetooth devices used with the MRx must support the Bluetooth Dialup Networking Profile (DUN) or the File Transfer Profile (FTP). DUN devices must also have a data transfer plan that supports packet data transmission. Event summaries can only be transmitted via Bluetooth File Transfer Profile (not DUN).

Environmental

Temperature:	0°C to 45°C operating, -20° to 70°C storage
Humidity:	Up to 95% relative humidity

Operating and Storage:	1014 hPa to 572 hPa (0 to 15,000 ft.; 0 to 4,500 m)

Operating Impact:	Half-sine waveform, duration < 3 ms, acceleration > 145 g, 1 time on all six faces
Non-operating:	Trapezoidal waveform, acceleration ≥ 30 g, velocity change=742 cm/s ± 10% on all six faces

Environmental

Bump:	EN60068-2-29 Bump (Half-sine, 40 g peak, 6 msec duration, 1,000 bumps x 3 axes)
Free fall:	EC 68-2-32 Free fall. Drops on all faces onto a steel surface (excluding bed rail hook) - 30 in. (76.2 cm) with carrying case - 16 in. (40.6 cm) without carrying case

Operating:	MIL STD 810E 514.4 Category 6 Helicopter, General Storage, UH60;
Non-Operating:	- IEC 68-2-6 Vibration (sinusoidal) (10-57 Hz, + 0.15mm; 58-150 Hz, 2g; 20 sweeps x 3 axes) - IEC 68-2-64 Vibration, broad-band random (10-20 Hz, 0.05 g²/Hz; 20-150 Hz, -3 dB/octave; 150Hz, 0.0065g²/Hz; 1.5 hours x 3 axes)
Solids/Water Resistance:	IP24. Water testing performed with cables connected to the device
EMC:	Complies with the requirements of standard EN 60601-1-2:2001
Safety:	Meets the UL 2601-1, CSA C22.2 No. 601-1, EN 60601-1 and 60601-2-4 standards.
Other Considerations:	Device not suitable for use in the presence of concentrated oxygen or a flammable anesthetic mixture with air, oxygen, or nitrous oxide
Mode of Operation:	Continuous

Input:	100-240 VAC, 50-60 Hz, 1-0.46 A (Class 1)
Output:	18 V, 5 A, 90 W
Battery:	Minimum 14.4 V Rechargeable, Lithium Ion

Input:	10-32 VDC, 11 A
Output:	18V, 5 A, 90W

Philips Healthcare is part of
Royal Philips Electronics

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Q-CPR is a registered trademark of Laerdal Medical Corporation. FilterLine is a
registered trademark and Smart CapnoLine is a trademark of Oridion Medical Ltd.
The HeartStart MRx contains an Ezurio PC Card with Bluetooth wireless technology.
The Bluetooth wordmark and logos are owned by the Bluetooth SIG, Inc. and any
use of such marks by Ezurio is under license. Rosetta-Lt is a trademark of General
Devices. Toshiba is a trademark of Toshiba Corporation. Witcomm is a trademark
of Broadcomm Corporation. IVT is a trademark of IVT Software technology Inc.
TruWave is a registered trademark of Edwards Lifesciences. DTX Plus is a trademark
of Becton, Dickinson & Co. Other trademarks and trade names are those of their
respective owners.

Please visit www.philips.com/heartstart
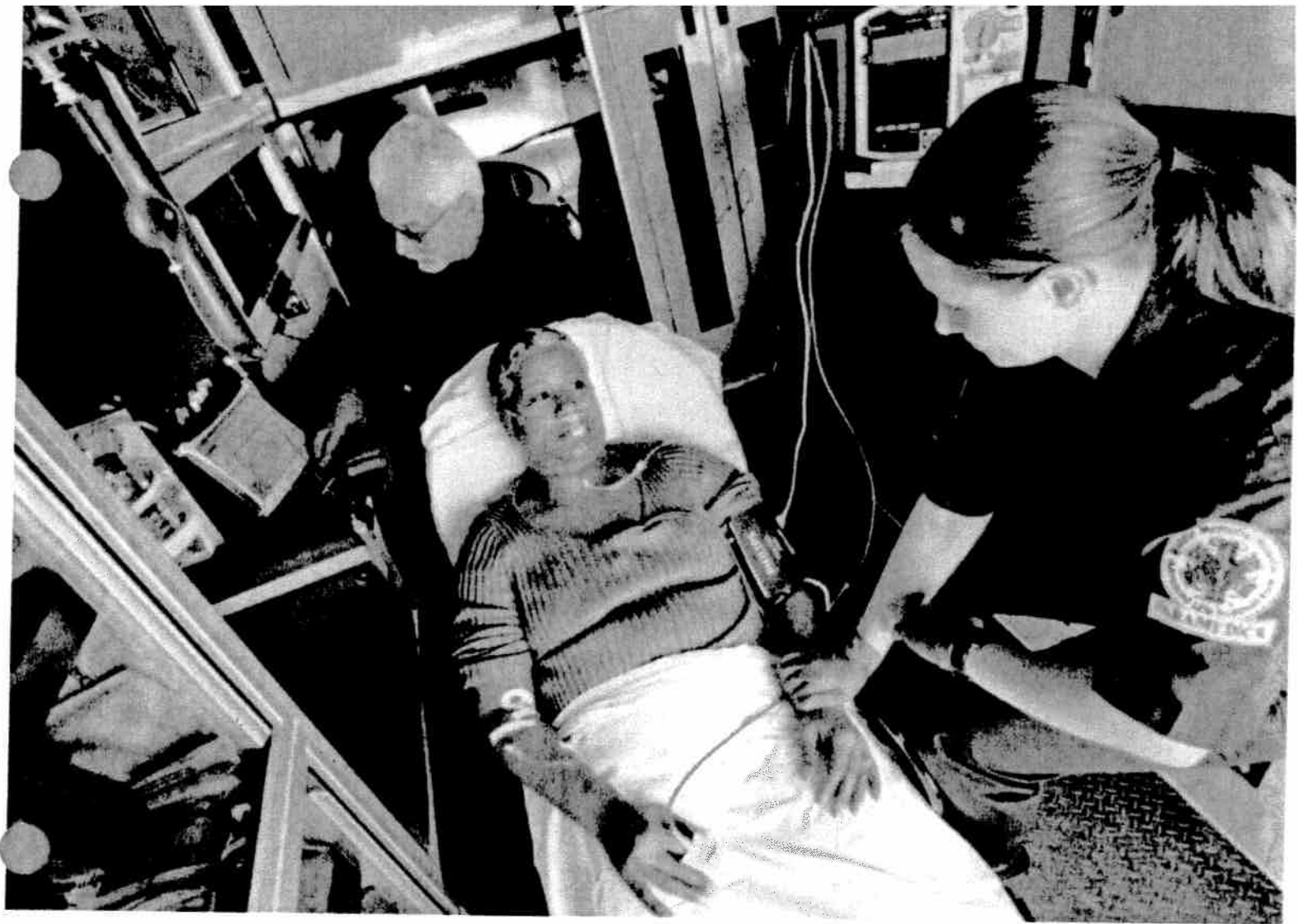
Meaningful innovations

Philips HeartStart MRx ALS Monitor/Defibrillator for emergency care

PHILIPS

Driving the course

More and more, EMS is driving the course of emergency care by enabling clinical decisions that determine where, when, and how your patients are treated by you in the field and once they reach the hospital. You are leading the way with the adoption of new technologies, such as CPR measurement and feedback tools, advanced monitoring that detects STEMI, and more sophisticated medical treatment in the field such as hypothermia protocols. Your efforts are resulting in earlier recognition of conditions and trends, earlier use of therapeutic interventions, and earlier reporting and care in the receiving hospitals, all of which are revolutionizing patient care.

Periodic Clinical Data Transmission automatically sends vitals and waveforms ahead of the patient's arrival for efficient hand-off and ED triage.

Philips advanced DXL 12-Lead ECG algorithm takes STEMI clinical decision support to a new level with unique capabilities that enable confident decision-making to help speed triage.

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# of care

Leading the way with meaningful innovations

Philips is leading the way with meaningful innovations in emergency care that can help you quickly and effectively respond to your patients and influence their course of care as never before. As a worldwide leader in emergency care, we draw on our vast network for real-world input to design solutions that matter most to you.

The Philips HeartStart MRx ALS Monitor/Defibrillator, which includes Q-CPR™ and our advanced DXL 12-Lead ECG algorithm, seamlessly provides industry-leading patient monitoring capabilities, superb diagnostic measurements, robust and reliable STEMI clinical decision support tools, and evidence-based, proven resuscitation therapies in an intuitive, easy-to-use, and rugged design. Our open systems approach to data management, called "Connected Care," helps you streamline information so that it flows from your EMS agency to and throughout the hospital for optimal patient care and operational efficiency.

The HeartStart MRx is tough enough to receive an Airworthiness Release (AWR) from the United States Army after extensive testing for the most rigorous and demanding environments faced by military personnel
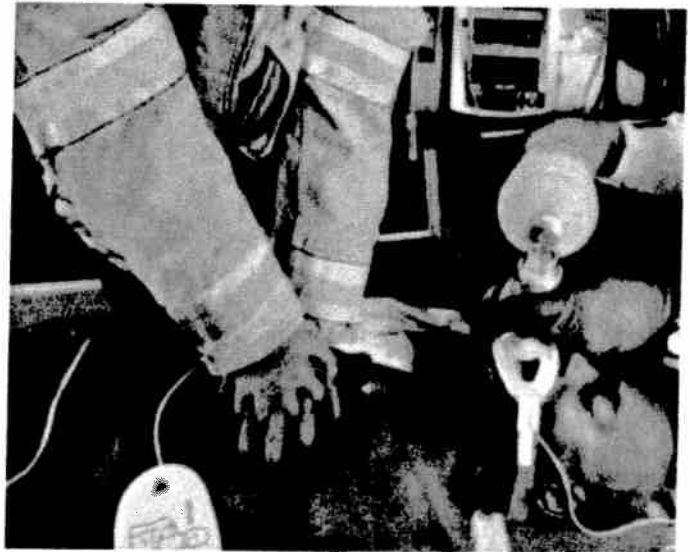
Q-CPR helps improve CPR quality and is supported by more published data than any other CPR quality improvement tool.

Advanced STEMI clinical decision support tools

Whether you have immediate access to percutaneous coronary intervention (PCI) or are in an area where transport times may necessitate treatment with thrombolytics. Our unique total STEMI solution helps support and speed the entire relay of care starting with the point of discovery when you take the first 12-lead ECG to hand-off at the ED and through the hospital to the Cath Lab and post-procedure care areas.

12-lead ECG strip
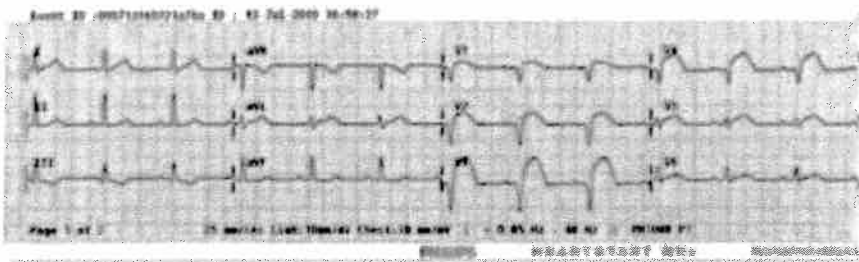
STEMI decision support data

Patient age and chest pain status.

STEMI-Culprit Artery identification (Left Anterior Descending).

Acute cardiac ischemia predictive probability data

Predicted probability of acute ischemia.

Explanation of clinical factors behind the predicted probability.

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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.

Key tools:

- Pinpoints the **STEMI-Culprit Artery** most likely responsible for the acute symptoms, which can assist in directing care in the field and treatment in the Cath Lab.
- Generates **Critical Values** for four distinct life-threatening conditions – acute MI, acute ischemia, complete heart block, and very fast heart rate – that require immediate clinical attention.
- Provides enhanced **Gender-Specific Diagnostic Criteria** to improve recognition and interpretation of cardiac symptoms in women.

We also offer predictive instruments designed to help support confident decision-making.

- **Acute Cardiac Ischemia – Time Insensitive Predictive Instrument (ACI-TIPI)** uses the 12-lead ECG to provide a percentage score for predicted probability that the patient is experiencing acute ischemia.
- **Thrombolytic Predictive Instrument (TPI)** uses the 12-lead ECG to predict patient outcome with and without thrombolytic therapy.

The HeartStart MRx is a key element of our total STEMI solution and works with Philips cardiographs, patient monitors, ECG information management systems, and Cath Lab imaging and information solutions to streamline workflow, improve productivity, and raise the quality of your system's STEMI care.

Flexible and fast 12-lead transmission

Time to reperfusion begins when you take the first 12-lead ECG in the field. 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, or cardiologist's smart phone – to begin the next level of care.

Industry-leading monitoring capabilities

You face a wide range of emergency care challenges every day. We continue
to tailor and enhance our industry-leading, advanced monitoring capabilities so
that you can better assess your critical care patients.

"With the growing research supporting
the use of cooling following cardiac
arrest and with other critical care
patients, continuous temperature
monitoring is an increasingly
important parameter."

Dr. Lance Becker
Professor of Emergency Medicine
Director, Center for Resuscitation Science
University of Pennsylvania
Philadelphia, Pennsylvania USA

The HeartStart MRx provides a wide range of monitoring
capabilities. Key monitoring parameters include:
• 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-SpO_2 (Fourier Artifact Suppression Technology)
• Microstream® Capnography ($EtCO_2$)
• Continuous temperature monitoring (core and skin) for
  post-resuscitation hypothermia protocols
• Invasive blood pressure (2 lines)
• Noninvasive blood pressure
• Vital signs trending
• Audio recording

Collaborate with hospital care teams using telemedicine

Periodic clinical data transmission
• Communicate/collaborate on critical care patients:
  stroke, trauma, respiratory, pediatric, cardiac
• Automatically document critical events and vitals en
  route so you can focus on your patient
• Help hospital care teams better prepare for arrival

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Built tough,
ready for action

Rugged and reliable

For whatever you face in a day, the HeartStart MRx is built to be tough and ready for action. The HeartStart MRx is designed to meet stringent test requirements including spraying water, military helicopter vibration, mechanical shock, one-meter drop, electro-magnetic compatibility, and extreme environmental conditions (temperature, humidity, and altitude). In addition, the same MRx model that we ship to all EMS customers has passed an extensive battery of tests, performed by the US military, to achieve aeromedical airworthiness certification. These military-level tests include: baseline performance and durability, electrical safety, vibration, electro-magnetic compatibility, climate, altitude, rapid decompression, explosive atmosphere, acceleration, and in-flight performance evaluations.

Integration and upgrades made easy

Ease of use is the hallmark of all our defibrillators and the HeartStart MRx is no exception. Training your medics to use the HeartStart MRx is straightforward due to its intuitive and easy-to-use design. Once the HeartStart MRx becomes part of your system, it can be easily upgraded in the field so that you receive the benefits of Philips advancements now and into the future without increasing the size of your device.
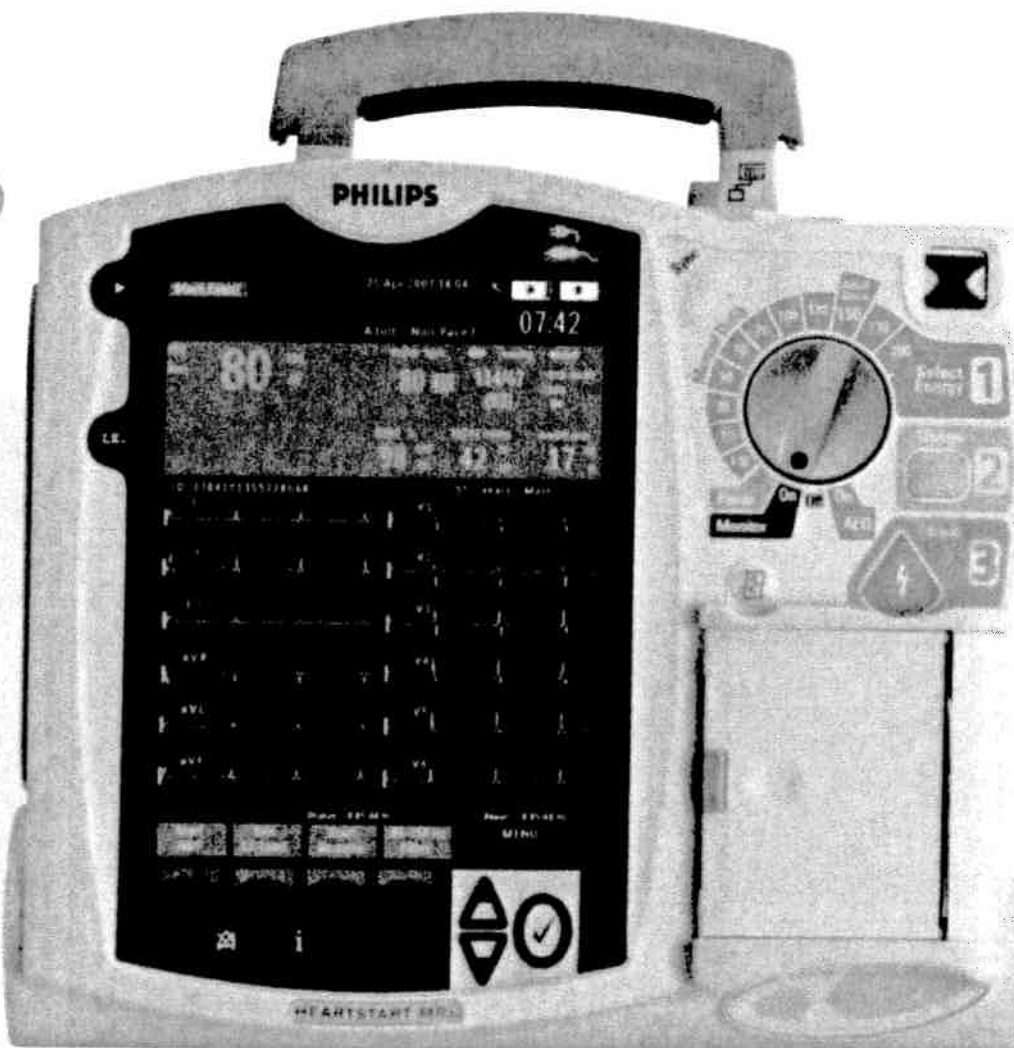
Defibrillation as easy as 1-2-3

1. Select energy to choose appropriate dosage
2. Charge button charges the defibrillator in <5 seconds
3. Press shock button to deliver therapy

Active ready-for-use visual indicator flashes to signal the device has power and is in good functioning order to monitor and deliver a shock.

Intuitive design with therapy controls and connections on the right, monitoring on the left.

Large color display shows 4 waveforms and numerics, or view all 12 leads at once with the 12-lead acquisition option.

Normal or high-contrast view for easy viewing in bright sunlight conditions

10 hours of monitoring with two fully charged batteries.

Automated self-tests that run hourly, daily and weekly. Easy-to-run operational checks

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Enhanced resuscitation

Our evidence-based, proven resuscitation therapies are designed to work together to help you give sudden cardiac arrest (SCA) patients the best chance of surviving and returning to active living.

"The shock remains important, but we also need integrated quality CPR, cooling, and good post-arrest care. Resuscitation is about saving a patient's life on the front end and returning the person to an active life on the back end."
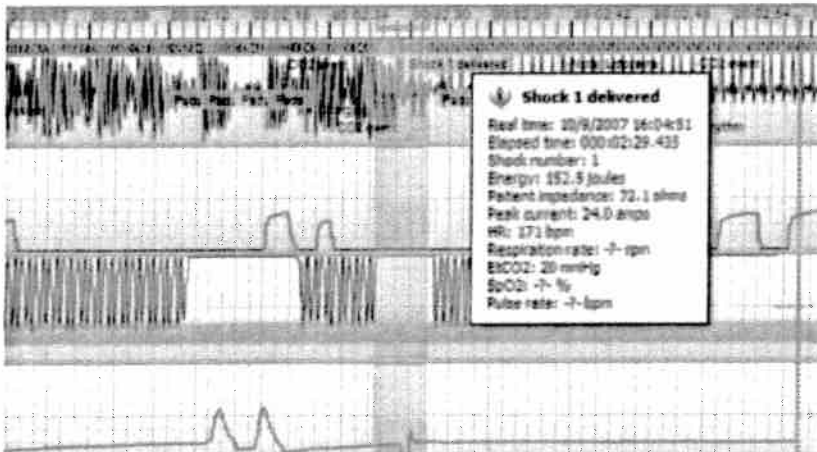
Dr. Lance Becker
Professor of Emergency Medicine
Director, Center for Resuscitation Science
University of Pennsylvania
Philadelphia, Pennsylvania USA

- **SMART Biphasic** therapy has been rigorously studied and is supported by substantial peer-reviewed, published data. It has been clinically proven to deliver high first shock efficacy for long-downtime SCA patients, as well as to effectively defibrillate across the full spectrum of patients, including those considered "difficult-to-treat."[1-5]
- **Q-CPR** measurement and feedback tool is supported by more published data than any other CPR quality improvement tool. It has been demonstrated to improve CPR and patient outcomes.[6]
- **Quick Shock** enables fast time to shock. Delivering a shock quickly after chest compressions is critical as the benefits of CPR – oxygenated blood delivered to the vital organs – dissipate in seconds.[7,8]
- **Therapeutic Hypothermia** has been shown to improve outcomes when delivered early after an ischemic event.[9,10,11,12,13] The MRx has core temperature monitoring and trending to support cooling protocols. And, Philips offers advanced in-hospital temperature modulation therapy with its InnerCool family of products.

Shock 1 delivered
Real time: 20/9/2007 16:04:51
Elapsed time: 000:02:29.433
Shock number: 1
Energy: 152.5 joules
Patient impedance: 72.1 ohms
Peak current: 24.0 amps
HR: 171 bpm
Respiration rate: -?- rpm
EtCO2: 20 mmHg
SpO2: -?- %
Pulse rate: -?- bpm

HeartStart Event Review Pro captures and stores the entire code for post-event review to help your team reach its full potential for saving more lives. This breakthrough application provides a robust, insightful view of a resuscitation event, along with built-in, easy-to-use navigation to pinpoint areas in a specific patient's code event for learning and improvement.

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therapies

Q-CPR: CPR quality improvement tool

The **Philips Q-CPR** measurement and feedback tool is supported by more published research than any other CPR quality improvement tool and is available as a fully integrated option with the HeartStart MRx.

Our next-generation Q-CPR has been enhanced based on new research and input from current customers. It is now available with the new award-winning, digital Q-CPR Meter, which enables you to rapidly adjust performance by displaying dynamic, real-time feedback for each compression, directly on the patient's chest. Voice prompts are also available and can be configured based on your preference.

Reinforce effective CPR

A study used the HeartStart MRx with Q-CPR during actual cardiac arrest events to provide real-time feedback and simultaneously capture performance data. When medical professionals participated in weekly debriefing sessions, improvements were shown in CPR performance, which correlated with an increase in return of spontaneous circulation (ROSC).[6]

As this study demonstrated, continuous CPR training and improvement are the cornerstone of a successful CPR quality improvement program. Philips robust data management program, **HeartStart Event Review Pro**, captures the Q-CPR data and supports system-wide quality improvement.

"Real-time measurement and feedback on CPR performance with follow-up debriefing helps improve CPR quality and could truly make a difference in out-of-hospital arrest outcomes."

Dr. Benjamin S. Abella
Clinical Research Director
Center for Resuscitation Science
University of Pennsylvania
Philadelphia, Pennsylvania USA

Hitting the mark.
Good compressions.

Compress deeper.

Compress faster.

The Q-CPR meter helps ensure that every compression meets depth, rate, and complete release targets to help improve the patient's chance of survival and increase the opportunity for a complete neurological recovery.

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Connected Care

Our goal is operational efficiency, enabling you to focus more on patient care and less on moving data during treatment and transport. We do this through our open data management approach called, "Connected Care," which means timely transmission of data, open integration to streamline information flow, and quality debriefing to help you and your medics continuously improve your emergency response services.

With Philips, you have many options to help optimize your operation:

- Whatever your workflow, print, display, fax, email, Bluetooth or Ethernet, we can accommodate it.
- Flexible, fast, and reliable solutions ensure data gets to the next level of care.
- Reliable and trackable automated download and delivery solutions mean no files or data are left behind and reduces medic involvement in administrative tasks so you can focus on more important activities.
- Only the HeartStart MRx moves data at LAN speed, which enables rapid downloads and faster device return-to-service times.
- Automatic time setting ensures the HeartStart MRx is in sync with the system of record from "911 call" to "device on".

"With the MRx, we can now capture all patient data in one place from "device on" through transport. We can query key data points in seconds, which used to take us hours or days and a lot of manual work. With better data, we are in a better position to improve our emergency response services."

Scott Isaacs
Division Chief of EMS
Indianapolis Fire Department
Indiana USA

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Dimensions	Without external paddles: 12.4" (W) x 8.3" (D) x 11.7" (H) (313 mm x 210 mm x 295 mm). With external paddles: 13.4" (W) x 8.3" (D) x 13.6" (H) (340 mm x 210 mm x 345 mm).		Type	6.0 Ah, 14.8 V, rechargeable lithium ion
Weight	13.2 lbs. (6 kg): base unit with 1 battery, pads, and pads cable. Carrying case adds 4.1 lbs. (1.86 kg). Paddle tray and external standard paddles add less than 2.5 lbs. (1.1 kg).		Dimensions	6.5" (H) x 3.8" (W) x 1.6" (D) (165 mm x 95 mm x 42 mm)

Dimensions — Without external paddles: 12.4" (W) x 8.3" (D) x 11.7" (H) (313 mm x 210 mm x 295 mm). With external paddles: 13.4" (W) x 8.3" (D) x 13.6" (H) (340 mm x 210 mm x 345 mm).

Weight — 13.2 lbs. (6 kg): base unit with 1 battery, pads, and pads cable. Carrying case adds 4.1 lbs. (1.86 kg). Paddle tray and external standard paddles add less than 2.5 lbs. (1.1 kg).

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

Dimensions — 8.4" diagonal (128 mm x 171 mm)

Type — TFT color LCD

Resolution — 640 x 480 pixels (VGA)

Wave Viewing Time — 5 seconds (ECG)

Model — HeartStart MRx (M3536A)

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: 180 ohm

AED Mode — Shock advisory sensitivity and specificity meet AAMI DF-39 guidelines

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

Type — 6.0 Ah, 14.8 V, rechargeable lithium ion

Dimensions — 6.5" (H) x 3.8" (W) x 1.6" (D) (165 mm x 95 mm x 42 mm)

Weight — 1.6 lb. (0.73 kg)

Charge Time — Approximately 3 hours to 100%, 2 hours to 80%

Capacity — At least 5 hours of monitoring with ECG, SpO$_2$, CO$_2$, 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$_2$, CO$_2$, 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)

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

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 ±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

Noninvasive pacing	SpO$_2$ pulse oximetry
Noninvasive blood pressure	CO$_2$ 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	

For detailed specifications see the HeartStart MRx product description document. Application notes are also available to describe the advanced features of the HeartStart MRx

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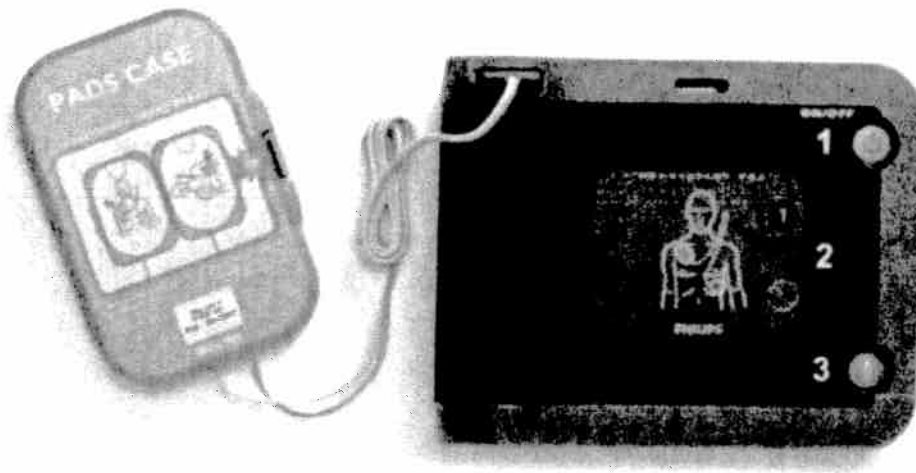
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For those who get there first

Philips HeartStart FRx Defibrillator

The Philips HeartStart FRx Defibrillator is designed to be easy to set up and use, as well as rugged and reliable for those who get there first. On the scene with law enforcement, on the field with student athletes, or on the job with employees, the FRx Defibrillator treats sudden cardiac arrest (SCA) in environments and conditions too demanding for other defibrillators.

The HeartStart FRx Defibrillator is designed to be:

- **Easy to set up**. The HeartStart FRx Ready-Pack configuration is delivered to you complete and virtually ready to rescue. It arrives with the FRx already inside its carry case, pads pre-connected, battery inserted, and a set of spare pads in place.
- **Easy to use**. Built on a platform of proven ease-of-use, the FRx features CPR coaching and intuitive icon-driven operation. Calm, clear voice instructions are tailored to the responder's actions, providing guidance during the resuscitation of an SCA victim.

- **Rugged**. Designed for real-world use, the FRx was built to surpass rigorous testing requirements: jetting water, loads up to 500 pounds, and a one-meter drop onto concrete.
- **Reliable**. The HeartStart FRx Defibrillator is powered by a long-life (four-year) battery. The device conducts automated daily, weekly, and monthly self-tests including pads readiness. Audible and visual cues for helping assure FRx readiness, including the blinking green "Ready" light.
- **Safe**. The HeartStart FRx is designed to deliver therapy only if the patient's heart rhythm is shockable. Additionally, the Philips SMART Biphasic waveform is highly effective, yet minimizes harmful side effects. Its effectiveness is backed by over 40 published, peer-reviewed studies.[1]

Bringing innovation to the treatment of SCA

- **Preconnected SMART Pads II**. Save valuable time in an emergency with preconnected pads that can be used on adults and children. SMART Pads II eliminate the expense of having to purchase different sets of pads for different patient types.
- **Infant/Child key**. Simply insert the Infant/Child key into the FRx to signal to the device that you're treating an infant or child. The defibrillator adjusts to provide special pediatric pads placement and CPR instructions, and reduces the shock energy to a more appropriate level.
- **Wireless data transfer**. The FRx provides a mobile, wireless solution for data management with a Smartphone or PC. It features an infrared data port for easy transmission of information without cables or hardwire compatibility issues.

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HeartStart FRx Defibrillator specifications

Defibrillator family	FRx. Order 861304
Standard configuration	Defibrillator, battery, SMART Pads II (1 set), Setup and Maintenance Guides, Owners 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, Owners Manual, Quick Reference Guide, Date Sticker
Waveform	Truncated Exponential Biphasic. Waveform parameters adjusted as a function of each patient's impedance
Therapy	Adult defibrillation: Peak current 32A (150 J nominal into a 50-ohm load). Pediatric defibrillation with optional FRx Infant/Child key installed: Peak current 19A (50 J nominal into 50-ohm load)
Protocol	Device follows preconfigured settings. Defibrillation and CPR protocol can be customized using HeartStart Event Review software

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 i-button, orange Shock button, optional Infant/Child key
Indicators	Ready light, blue i-button, caution light, illuminated pads, icons, Shock button lights up when shock is advised.

Size	2.4″ x 7.1″ x 8.9″ (6 cm x 18 cm x 22 cm) D x H x W.
Weight	With battery and pads case: 3.5 lbs. (1.5 kg)

Sealing	Waterjet proof IPX5 per IEC60529 Dust protected IP5X per IEC60529
Temperature	Operating/Standby: 32° - 122° F (0°- 50° C)
Altitude	0 to 15,000 feet
Aircraft	Device: RTCA/DO-160D;1997
Crush	500 pounds
Vibration	Operating: meets MILSTD 810F Fig.514.5C-17, random; Standby: meets MILSTD 810F Fig.514.5C-18, swept sine
EMI (radiated/ immunity)	CISPR II Group I Class B, IEC 61000-4-3, and IEC 61000-4-8

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 (Circulation 1997;95:1677-1682)
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 end 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	Advanced signal processing allows accurate ECG analysis even in the presence of most pacemaker artifact and electrical noise sources. Other artifacts are detected and corrective voice prompts issued

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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 5 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 1 battery insertion test and no defibrillation uses)

SMART Pads II

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

Training Pads II

Item number	989803139271
Function	Training pads place HeartStart FRx into training mode and suspend its energy delivery capability. Features 8 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

Data recording and transmission

Infrared	Wireless transmission of event data to a Smartphone or 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

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

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Philips is a Global 500 company and one
of the world's largest medical products
companies

Philips has shipped nearly three-quarters
of a million AED units

Philips HeartStart defibrillators are
deployed on airlines and in airports,
workplaces, schools, healthcare facilities,
and communities worldwide

Please visit www.philips.com/FRx for more information
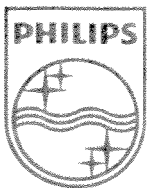
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For those who get there first

Philips HeartStart FRx Defibrillator

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sense and simplicity

Anyone, anywhere,

- The current survival rate for sudden cardiac arrest (SCA) is under 7%
- The likelihood of successful resuscitation decreases by about 10% with every minute that passes
- It is estimated an additional 40,000 lives could be saved each year in the U.S. alone with widespread access to AEDs[1]

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anytime

Power to save a life

Each year sudden cardiac arrest (SCA) strikes nearly 300,000 people in the US, 700,000 people in Europe, and hundreds of thousands more worldwide. More people die from SCA than from breast cancer, prostate cancer, house fires, handguns, traffic accidents, and AIDS combined.

SCA can happen to anyone, anytime, anywhere and sometimes in extreme conditions. Rely on the Philips HeartStart FRx Defibrillator to be up to the task. In the hands of those who get there first, it provides the power to help save a life.

Coming to the rescue
In many emergency situations, police are often the first to arrive on the scene, and early defibrillation by these first responders has been shown to improve survival.[2,3]

Taking care of business
Thirteen percent of workplace fatalities reported in 1999 and 2000 were due to cardiac arrest.[4]

Protecting kids, parents and teachers
An estimated 5,000-7,000 children in the U.S. succumb to sudden cardiac arrest annually,[5] many related to sporting events.

Rugged and reliable

Prescription required.

The Philips FRx Defibrillator features technological
advancements to help in treating the most common
cause of SCA. It's designed to be easy to set up and
use, as well as rugged and reliable for those who get
there first. On the scene with law enforcement, on
the field with student athletes or on the job with
employees, the FRx Defibrillator is the solution for
treating SCA in environments and conditions too
demanding for other defibrillators.

Bringing innovation to the treatment of cardiac arrest

Preconnected SMART Pads II

SMART Pads II can be used for both adults and children. They eliminate the expense of having to purchase different sets of pads for different patient types. SMART Pads II enable the FRx to keep pace with responders by adjusting to their actions.

Infant/Child key

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 to provide special pads placement and CPR instructions. The pads icons also flash to show you the optimized pads placement, and the device reduces the shock energy to a level more appropriate for an infant or a child.

Intuitive

Clean design and clear voice instructions, including CPR coaching, are designed to help instill the confidence that's needed when treating a person in cardiac arrest.

Wireless Data Transfer

Infrared data port for easy transmission to a Smartphone or PC running Event Review software, without cables or hardwire compatibility issues.
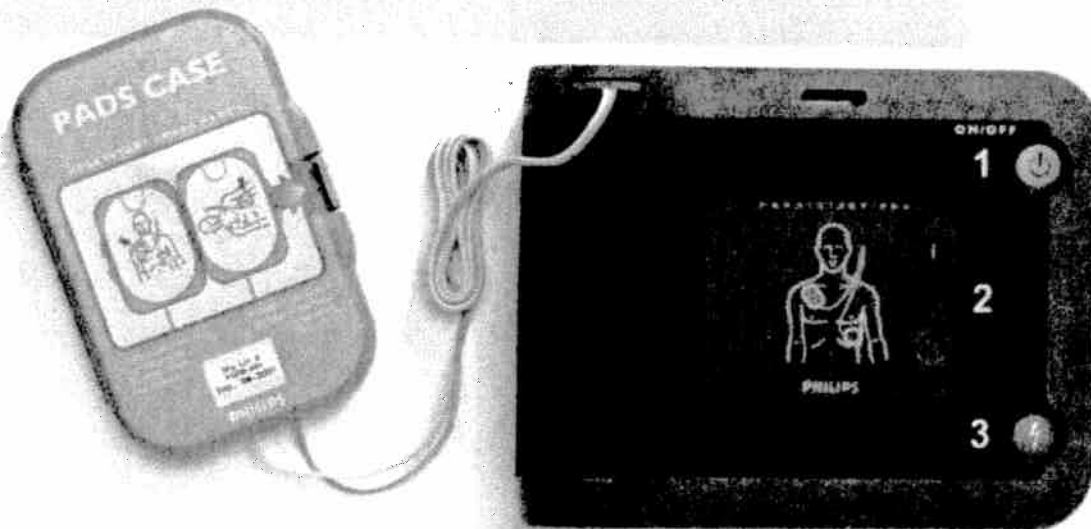
Proven therapy

At the core of all HeartStart Defibrillators is SMART Biphasic technology. The Philips SMART Biphasic waveform is highly effective, yet minimizes harmful side effects. Its effectiveness is backed by over 40 published, peer-reviewed studies.[6]

SMART Analysis automatically assesses the victim's heart rhythm and is designed not to deliver therapy unless the rhythm is determined to be shockable – even if the Shock button is pressed. And with patented Quick Shock, the FRx is among the fastest in class at delivering a shock after CPR. Studies show that minimizing time to shock after CPR may improve survival.[7,8,9,10,11] As American Heart Association Guidelines 2005 note, "Reduction in the interval from compression to shock delivery by even a few seconds can increase the probability of shock success."[12]

Designed for real world use

The Philips HeartStart FRx Defibrillator is exceptionally rugged. Designed to surpass rigorous testing requirements, the FRx withstands jetting water, loads up to 500 pounds, and a one-meter drop onto concrete.

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.

Built on a platform of proven ease-of-use
The HeartStart FRx Defibrillator was designed to be as easy to use as the HeartStart OnSite Defibrillator and shares many of its features, including CPR coaching and intuitive icon-driven operation. Small and lightweight – just 3.5 lbs/1.5 kg – the FRx is equipped to direct you through the resuscitation of a SCA victim.

The HeartStart FRx guides you through every step with clear, calm voice commands and descriptive visual icons. The FRx even reminds you to call emergency medical services (EMS). Pressing the blue i-button activates HeartStart CPR Coaching for assistance with CPR. The flashing icons and the quick reference guide can be used to lead you through the defibrillation steps – even in situations where hearing voice instructions is a challenge.

Reliability backed by Philips
Every HeartStart FRx goes through a 120-point quality test before it leaves the factory. The HeartStart FRx Defibrillator is powered by an easy-to-install, long-life (four-year) battery, so you know the device is charged and ready. The device's automated daily, weekly, and monthly self-tests check pad readiness, and verify functionality and calibration of circuits and systems. With over 85 tests, the FRx is one of the most comprehensive self-testing devices on the market and is virtually maintenance-free. The blinking green "Ready" light on the defibrillator is your assurance that the device has passed its last self test and therefore is ready for use.

Once EMS arrives, hand-off is fast and easy because the FRx is compatible with advanced defibrillators like the HeartStart MRx. With HeartStart adapters, our pads can be plugged into devices from other manufacturers to ensure continuity of care.

Designed to be the easiest-to-own AED

Easy to set up
The HeartStart FRx Ready-Pack configuration arrives to you complete and virtually ready to rescue. Just pull the green tab to initiate the FRx self-test, confirming its readiness for use, and put the device right into service. The FRx Ready-Pack comes with the FRx already inside its carry case, pads pre-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.

Establishing a successful program from the start
As the world leader in automated external defibrillators (AEDs), we're also a leader in providing products and services designed to help you establish and maintain a successful AED program, including SMART Track AED program management, medical direction, access to training providers, and post-event support options.

Our customers agree that with Philips, you're well prepared, even across multiple sites with hundreds or thousands of employees. Philips experts have helped define industry best practices in AED program management, and we support American Heart Association and European Resuscitation Council guidelines for early defibrillation programs.

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HeartStart FRx Defibrillator specifications

Defibrillator family	Order 861304. Defibrillator, battery, SMART Pads II (1 set), Setup and Maintenance Guides, Owners 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, Owners Manual, Quick Reference Guide, Date Sticker
Waveform	Truncated Exponential Biphasic. Waveform parameters adjusted as a function of each patient's impedance
Therapy	Adult defibrillation: Peak current 32A (150 J nominal into a 50-ohm load). Pediatric defibrillation with optional FRx Infant/Child key installed: Peak current 19A (50 J nominal into 50-ohm load)
Protocol	Device follows preconfigured settings. Defibrillation and CPR protocol can be customized using HeartStart Event Review software
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 i-button, orange Shock button, optional Infant/Child key
Indicators	Ready light, blue i-button, caution light, illuminated pads, icons, Shock button lights up when shock is advised
Size	2.4″ x 7.1″ x 8.9″ (6 cm x 18 cm x 22 cm) D x H x W
Weight	With battery and pads case: 3.5 lbs. (1.5 kg)
Sealing	Waterjet proof IPX5 per IEC60529 Dust protected IP5X per IEC60529
Temperature	Operating/Standby: 32° - 122° F (0°- 50° C)
Altitude	0 to 15,000 feet
Aircraft	Device: RTCA/DO-160D;1997
Crush	500 pounds
Vibration	Operating: meets MILSTD 810F Fig.514.5C-17, random; Standby: meets MILSTD 810F Fig.514.5C-18, swept sine
EMI (radiated/ immunity)	CISPR II Group I Class B, IEC 61000-4-3, and IEC 61000-4-8
Infrared	Wireless transmission of event data to a Smartphone or 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	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 end 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 accurate ECG analysis even in the presence of most pacemaker artifact and electrical noise sources. Other artifacts are detected and corrective voice prompts issued
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 5 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 1 battery insertion test and no defibrillation uses)
Item number	989803139261
Active surface area	12.4″² (80 cm²) each 13.2″² (85 cm²) each
Cable length	48″ (121.9 cm)
Use-by date	Pads case is labeled with a use-by date of at least 2 years from date of manufacture
Infant/Child Key	Item # 989803139311
Item number	989803139271
Function	Special pads place HeartStart FRx into training mode and disable its energy delivery capability. Features eight real-world training scenarios
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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Philips is a Global 500 company and one of the world's largest medical products companies.

Philips has shipped nearly three-quarters of a million AED units.

Philips HeartStart defibrillators are deployed on airlines and in airports, workplaces, schools, healthcare facilities, and communities worldwide.

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Please visit www.philips.com/FRx for more information

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Products and services, maximizing defibrillator performance

Philips HeartStart OnSite Defibrillator supplies and accessories

PHILIPS

sense and simplicity

Carry cases

There are three carry cases available for the HeartStart OnSite Defibrillator : the Standard Carry Case, the Slim Carry Case and the Hard-shell waterproof case. The Standard and Slim cases are constructed with semi-rigid materials and covered in durable red Cordura.® A window pocket inside both cases, the Standard and Slim, holds the OnSite Quick Reference Guide.

Standard Carry Case
Item # M5075A

In addition to the OnSite Defibrillator, the Standard Carry Case can accommodate one spare pads cartridge and a spare battery. It also comes equipped with a pair of paramedic scissors.

Dimensions:
9.5″ (24 cm) w, 8.5″ (21 cm) h, 4.8″ (12 cm) d

Slim Carry Case
Item # M5076A

The Slim Carry Case (M5076A) holds the OnSite Defibrillator and a pair of paramedic scissors.

Dimensions:
9.5″ (24 cm) w, 8.5″ (21 cm) h, 3.5″ (9 cm) d

Hard-Shell Carry Case
Item # YC

Our waterproof carry case made of hard-shell plastic is suited for more rigorous use, particularly in wet outdoor settings. It can also accommodate a spare battery, spare pads cartridge, and the contents of the Fast Response Kit.

Dimensions:
13.5″ (34 cm) w, 12″ (30 cm) h, 6″ (15 cm) d

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Wall mounting solutions

Philips Wall Mount Bracket and Defibrillator Cabinets let you strategically place defibrillators for fast access and response.

Wall Mount Bracket
Item # 989803170891

The Wall Mount Bracket is designed specifically for housing a Philips HeartStart defibrillator and its accessories. The defibrillator's carry case can be tethered to the Wall Mount Bracket with a breakaway Secure-Pull Seal (M3859A) to discourage tampering. A broken seal indicates that the defibrillator has been removed from the Wall Mount and accessories may need to be replenished. The Fast Response Kit (68-PCHAT) tucks neatly behind the Defibrillator Case.

Dimensions:
10.5″ (27 cm) w, 8″ (20 cm) h, 6.9″ (17 cm) d
Weight: 18.4 ounces (0.52 kg)

AED Awareness Placard
Item # 989803170901 (Red)
Item # 989803170911 (Green)

Raise AED awareness by putting an AED Awareness Placard above every AED located in a public area. Easy-to-understand graphics raise awareness of passers-by about how to use an AED in an emergency. Great for office settings, sports clubs, public facilities, school settings and more.

Dimensions:
10.25″ (26 cm) w, 4.5″ (11 cm) h
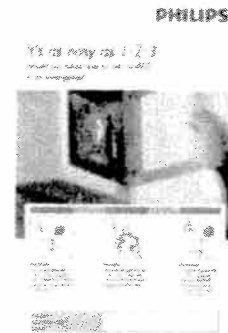
AED Awareness Poster Pack
Item # 861476   Opt. ABA (English)
   Opt. ABE (Spanish)
            Opt. ABF (French)

Place these posters away from the AED, in break areas, copy rooms or locker rooms – anywhere that employees or members of the public can take a moment to raise their awareness about AEDs. Includes space for the AED coordinator to write-in the location of the nearest AED. Pack of four posters.

Dimensions:
11″ (28 cm) w, 17″ (43 cm) h

Secure-Pull Seal
Item # M3859A
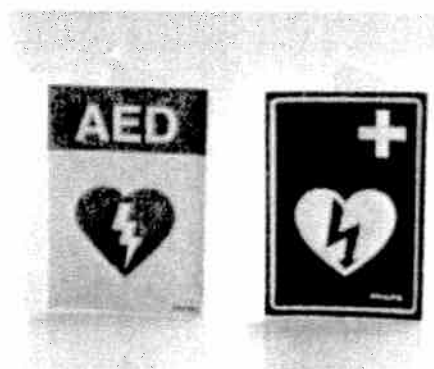
AED Wall Sign
Item # 989803170921 (Red)
Item # 989803170931 (Green)

An AED Wall Sign hanging above a Wall Mount Bracket or Defibrillator Cabinet gives even greater visibility to the defibrillator. Can be mounted three different ways to maximize visibility: T-mount, V-mount or Corner Mount.

Face dimensions:
9″ (23 cm) h, 6.1″ (15 cm) d

Wall mounting solutions

To help mobilize an emergency medical response or deter AED theft, Philips offers three different battery-operated, alarmed wall cabinets. The basic cabinet has a simple audible alarm. Also available are two premium cabinets: a wall surface mounted cabinet and a semi-recessed cabinet that is inserted into a wall cut-out for a less obtrusive look.* The premium cabinets feature combination audible and flashing light alarms. They are made of sturdy heavy-gauge steel, and are large enough to accommodate additional medical supplies, such as oxygen. You can also connect the premium cabinets' alarms to your internal security system so that a more coordinated emergency response can be mobilized centrally.

Basic Surface Mounted Cabinet
Item # 989803136531

Dimensions:
16.5" (42 cm) w, 15" (38 cm) h, 6" (15 cm) d

Premium Surface Mounted Cabinet
Item # PFE7024D

Dimensions:
16" (41 cm) w, 22.5" (57 cm) h, 6" (15 cm) d

Premium Semi-recessed Cabinet
Item # PFE7023D

Dimensions:
Recessed Compartment
14" (36 cm) w, 22" (56 cm) h, 6" (15 cm) d

Footprint on wall
16.5" (42 cm) w, 24.5" (62 cm) h, 2.5" (6 cm) d

* The Americans with Disabilities Act requires that objects not protrude more than 4"
  into foot traffic areas of open aisles and walkways unless the object's bottom edge is
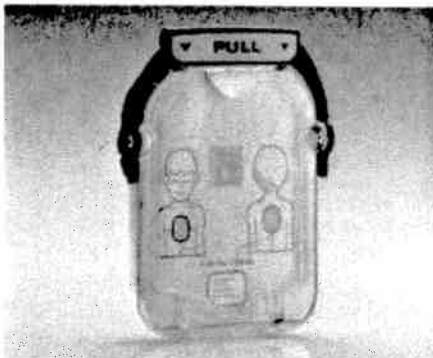 no higher than 27" from the ground

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SMART Pads Cartridges
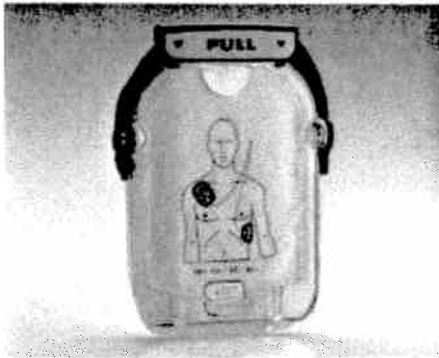
Adult SMART Pads Cartridge
Item # M5071A

HeartStart Adult SMART Pads are appropriate for cardiac arrest victims weighing 55 pounds (25 kg) or more.

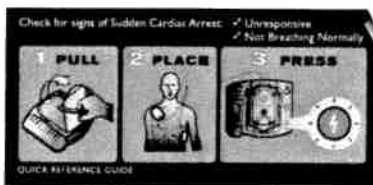**Infant/Child SMART Pads Cartridge**
Item # M5072A

Children under 8 years of age or weighing less than 55 pounds (25 kg), including infants, should be treated using HeartStart Infant/Child SMART Pads, if available. These pads instruct the defibrillator to provide voice instructions appropriate for a pediatric patient, and to reduce the energy of its shock from 150 to 50 Joules (J), a more appropriate dosage.[1,2] The Infant/Child Pads cartridge is marked with an indication of patient weight and with a teddy bear icon for easy identification. Purchase of this product requires a prescription.

1. Tang, et al. Pediatric Fixed Energy Biphasic Waveform Defibrillation Using a Standard AED and Special Pediatric Electrodes. Supplement to Circulation, Vol 102, No 18, October 31, 2000, II-437.
2. Cecchin, et al. Is Arrhythmia Detection by Automatic External Defibrillator Accurate for Children? Sensitivity and Specificity of an AED Algorithm in 696 Pediatric Arrhythmias. Circulation 2001; 103:2483-2488, May 22, 2001

Additional accessories

Quick Reference Guide
Item # M5066-97800

The Quick Reference Guide provides a brief overview of defibrillator operation. Its short captions and straightforward drawings break down each step of the defibrillation process.

Fast Response Kit
Item # 68-PCHAT

The Fast Response Kit contains tools and supplies typically needed for patient care and personal protection: two pairs of hypoallergenic nitrile gloves, a pocket breathing mask, paramedic scissors, a chest hair razor, and a large extra-absorbent paper towel. These items are housed in a zippered pouch which attaches securely to the handle of the carry case.

Dimensions:
9.5" (24 cm) w, 5.5" (14 cm) h

Long-life Battery
Item # M5070A

The OnSite Defibrillator uses a disposable, lithium manganese dioxide, long-life battery with a five-year shelf life plus a (typical) four-year installed life. A spare battery should be stored with the defibrillator. Additional batteries should be purchased for defibrillators used frequently for training and/or demonstrations.

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Training tools
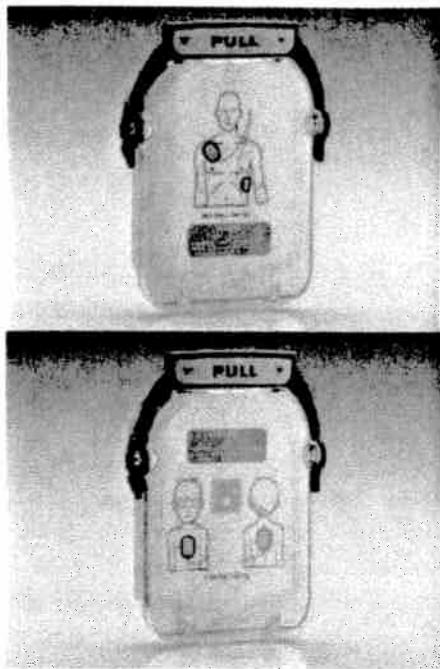
Training Cartridges
Item # M5073A (Adult)
Item # M5074A (Infant/Child)

To facilitate training on the OnSite Defibrillator, Adult and Infant/Child Training Pads Cartridges are available. These special purpose pads are installed in the HeartStart OnSite and the HeartStart Trainer. When installed in the OnSite, they suspend the defibrillator's ability to deliver a shock and activate its training mode, enabling the user to run any of eight emergency scenarios. Depending on which cartridge is used – Adult or Infant/Child – the defibrillator's voice instructions, including cardiopulmonary resuscitation (CPR) coaching, will be appropriate for treating the simulated victim.

Each training pads cartridge consists of a removable clear protective lid with a handle, a resealable film cover, and a pair of reusable adhesive pads.* It is packaged with a Pads Placement Guide (either Adult or Infant/Child) and illustrated instructions for installing the cartridge, using the Pads Placement Guide, and repackaging the cartridge after using it. A training pads cartridge can also be used on a manikin, connected with an internal (M5088A) or external (M5089A) manikin adapter.

HeartStart Trainer
Item # M5085A

For training many responders simultaneously, the Philips HeartStart Trainer is a flexible and economical solution. The HeartStart Trainer helps your responders learn to use the OnSite Defibrillator. With voice instructions matching those of the OnSite Defibrillator and eight preconfigured scenarios, the Trainer simulates how the defibrillator would operate during real-life situations the responders might encounter.

The HeartStart Trainer comes with a nylon carrying case, one reusable Adult Training Pads Cartridge (M5073A) and one External Manikin Adapter. Optional accessories include the Internal Manikin Adapter (M5088A) for use on selected manikins, the External Manikin Adapter 10-pack (M5089A) for use on all manikins, the Adult Pad Placement Guide (M5090A), and the Infant/Child Training Pads Cartridge (M5074A).

Instructor's Training Toolkit
Item # M5066-89100

The training toolkit includes instructional aids such as videos on DVD and presentations on CD for teaching groups of people to operate the HeartStart OnSite defibrillator.

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* Replacement pads are available for training cartridges: Adult, M5093A and Infant/Child, M5094A.

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Data management

Philips provides a broad range of tools to help you efficiently and effectively configure your HeartStart Defibrillators and then download, transmit, share, analyze, and report resuscitation data, so you and your medical director can fine tune your response to cardiac emergencies. Whether you manage a community public access program, a school AED program, a corporate emergency response team, an EMS system, or your hospital's resuscitation committee, the Event Review software suite has the tools you need to manage your defibrillator data.

HeartStart Review Express

Our simplest data management product for a quick look at defibrillator data, Review Express lets you download an ECG from your defibrillator, view it and print it. The program can be downloaded from the Philips data management website at no charge. (www.medical.philips.com/goto/eventreview)

Data Messenger
Item # PN 861451 Opt A01

HeartStart Data Messenger helps you move defibrillator cases to where they need to be. Its ideal for fire departments and EMS organizations who want to download defibrillator cases from their AEDs and forward them on to a central data administrator or medical director for retrospective review on Event Review or Event Review Pro. You can configure it to operate automatically in the background. Alternatively, you can configure it to be an easy-to-use wizard that guides you step by step in downloading, viewing and forwarding cases. Runs on a PC or Smartphone.

Event Review
Item # M3834A (single PC)
or 989803141811 (organization-wide)

Event Review allows you to download patient data from your defibrillator, and view it on your PC screen, annotate it with your comments, and add basic response and patient status information. You can save the case to a file or to a database, allowing ad hoc case queries, and case reports. You can also configure your OnSite with Event Review." It is available with single PC pricing or unlimited organization-wide pricing.

Event Review Pro
Item # 861431 Option A01 – Single PC
Item # 861431 Option A03 – Site license

Event Review Pro is our comprehensive case management tool for the most demanding data managers and medical directors, with even more detailed data entry screens to record every aspect of the response, including detailed response times, interventions, and patient observations. In addition to the individual case reports, you get Utstein reporting and graphical summaries of your system's overall response times to help you manage your service levels more efficiently.
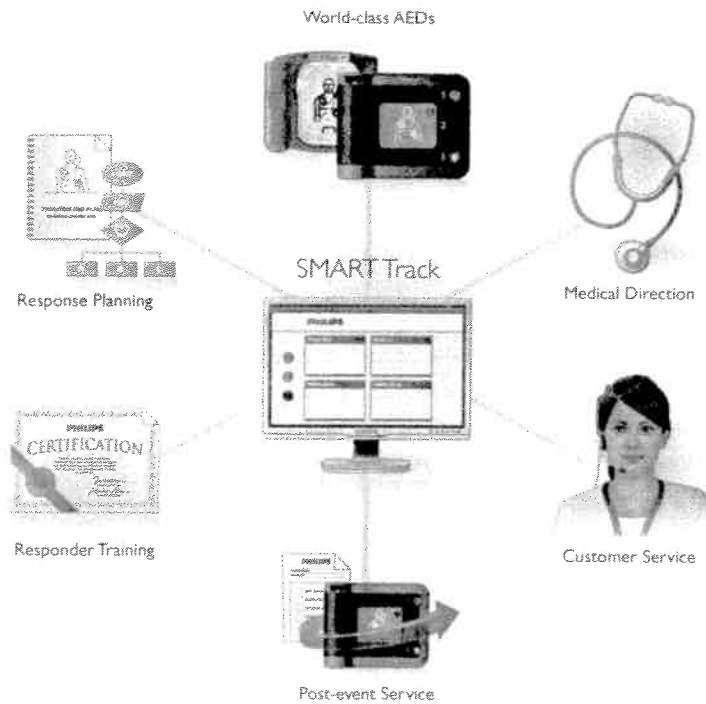

The Infrared Data Cable
Item # ACT-IR

Connected to a PC running HeartStart Review Express, Review Express Connect, Event Review or Event Review Pro, the Infrared Data Cable allows you to retrieve patient data from your OnSite Defibrillator for permanent storage as well as for viewing and reporting.

HeartStart Configure
Item #989803143041

HeartStart Configure enables you to review and change the configuration of your FRx or HS1 using your Pocket PC.* You can retrieve the current configuration from your defibrillator, reset the configuration to default values or revise individual settings according to your medical director's preferences, and transmit them to the defibrillator. To more efficiently manage configuration for your defibrillator program, you can save values to a file on your Smartphone. This lets you transmit the same configuration to all your AEDs as well as maintain a record of allowable settings.

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HeartStart AED Services*

We provide management tools and resources to support the needs of your AED program. Whatever your needs, we will work with you to find the services that are right for your situation. We can help you seamlessly manage important components of your AED program, including:

- SMART Track online program management
- Medical direction
- Training
- Maintenance
- Regulatory support
- Post-event support
- Customer service

World-class AEDs

SMART Track

Response Planning

Medical Direction

Responder Training

Customer Service

Post-event Service

Philips can help you implement a successful AED program at a single site or at multiple sites globally.

*Where available.

Please visit www.philips.com/OnSite

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