PHILIPS

Cardiac Workstation 7000

Technical datasheet

It turns heads. And transforms care.

Philips Cardiac Workstation 7000 is a clinical breakthrough designed to improve the way you capture, access, view, analyze, store, share, and manage ECGs – to transform diagnostic cardiography.

This ergonomic leap forward streamlines workflow by delivering rich clinical information from systems across your enterprise and beyond to the point of decision. So you can confidently diagnose and treat cardiac patients. No matter where care takes place.

Discover how Philips Cardiac Workstation 7000 can help you transform care – today and as the future unfolds.

Key advantages

- 1-2-3-step operation simplifies life
- Smartphone-like hand gestures speed care delivery
- Color-coded waveforms, lead checks, and preview screens ensure ECG quality
- Innovative ergonomics bring critical ECG information closer to you
- DXL Algorithm delivers interpretation and advanced diagnostic aids for up to 18 leads
- Expanded interoperability capabilities ensure tight integration into your enterprise and beyond

Cardiac Workstation 7000 (860441)

Features

Regulatory Clearances

EUMDR Clearance / CE Marked	2024
FDA 510(k) Clearance	2024

ECG Functions

Simultaneous lead acquisition	Up to 18 leads
ECG reports	3×4, 3×4 1R, 3×4 3R, 3×4 1R, ST maps, 6×2, 12×1 Standard and Cabrera formats, Pan 12 Cabrera
Standard measurements	• Ten interval, duration, and axis measurements • Configurable QT correction method
Rhythm strips	• 30 to 60 sec. • 12, 15, 16, or 18-Lead-lead rhythm strip export (XML)
Disclosure	• 20 minute history of up to 18 leads • Complete ECG report of any selected 10 seconds
Event marking	• 15 independent events can be marked for later review and analysis • Event markers appear on ECG reports • Note can be added for each event
Timed ECG	Support for pharma stress protocols
Report storage and transfer	Full fidelity at 1,000Hz of 10 seconds for up to 18 leads
Export Data Formats	• PDF • XML • DICOM 12-Lead ECG • DICOM General ECG • DICOM Encapsulated PDF
Pace pulse detection	• 0.02 mVms (e.g., 0.2 mV*0.1ms pulse or 0.1mV*0.2ms pulse) • Exceeds proposed standard 5X[1]

DXL ECG Algorithm [2,3,4]

Interpretive statements	> 600 interpretive statements Integrated pediatric analysis
Borderline statement suppression	Three configurable settings
Nomenclature	Aligned with 2007 AHA/ACCF/HRS Recommendations, Part II
Leads used in diagnosis	Standard 12 leads plus V3R, V4R,V5R, V7, V8, and V9
Extended measurements	• 46 parameters of morphology analysis in each of the 12 leads • 21 parameters of rhythm analysis
Reasons	Selectable explanations of all interpretive statements

STEMI Diagnostic Aids

Graphical ST presentation	• Two ECG reports with polar ST Maps • Frontal and transverse planes
Unique right heart statements	9 statements called by right-chest
Unique posterior MI statements	16 statements called by posterior leads
Age and gender criteria	Based upon Fourth Universal Definition of Myocardial Infarction, 2018
STEMI-CA (Culprit Artery)	• Criteria that suggest any of four probable sites of the occluded coronary artery • Based upon 2009 AHA/ACCF/HRS Recommendations, Part VI
Critical Values	Highlights four conditions requiring immediate clinical attention

QT Measurements

QTc measurements	• Bazett • Fridericia • Hodges • Framingham
Correction of QT interval & QRS duration	Rautaharju

Advanced Bi-directional Network Communications[5]

Central time management	Time can be manually or automatically synchronized to a Network Time Server
Orders worklist	• Download of orders worklist from networked server • User-configurable rules to retrieve workstation-specific worklists • User-configurable drop down lists (e.g., by location) • Ad-hoc query for specific orders based upon multiple user-entered or scanned search criteria (e.g., patient ID, last/ first name) • Supported by Open Worklist with IntelliBridge Enterprise and select departmental systems • Supported by HL7 interface via IntelliBridge Enterprise • Supported by DICOM Modality Worklist
ADT	• Query and retrieval of patient demographic information • Based upon user-entered or scanned search criteria (e.g., patient ID, last/first name) • Supported by standard HL7 interface via IntelliBridge Enterprise for hospital systems
Previous ECG reports (requires IntelliSpace ECG)	Automated retrieval and display of multiple previous ECG reports for scrolling and selection for side-by-side comparison with current ECG report
DICOM ECG report output (D08)	• DICOM 12-lead ECG • DICOM General ECG • DICOM Encapsulated PDF

Privacy and Security

Password frameworks	• Option 1: Role-based • Option 2: ECG function-based
User authentication	AD/LDAP
Data encryption at rest	SHA-256 and AES-128
Network access	Initiated by cardiac workstation only
Network communications	TLS 1.2 or greater for communications within hospital network
Security configuration capabilities behind customer-defined password	• USB port access (on/off) • HTTP, HTTPS • Encryption at rest (on/off) • Delete archived ECG after transfer (on/off) • User Authentication (on/off) • Consistent security approach across Cardiac Workstations and PageWriter TC-Series Cardiographs

Device Management Dashboard

Fleet Management	• Centralized Management of fleet configuration and software revisions. • In-scope solutions: PageWriter TC20/TC30/ TC35/TC50/TC70, SureSigns VS3/VS4, Efficia CM10/CM12, Efficia CM100/CM120/CM150, EarlyVue VS30 • Cardiac Workstation verified to Dashboard A.02.02, planned for release Q4 2024.

Signal Quality Indicators

Leads-off advisory	Anatomical lead map displays the location and label of loose or disconnected leads/ electrodes
Lead color	Four colors to indicate quality of individual leads
LeadCheck	Lead-placement software detects 20 different lead reversals
Heart rate	Continuous display of patient heart rate
Print preview	Full screen preview of complete 18-lead report prior to printing and/or export

User Training and Self-help

Training mode	• Integrated waveform simulation • In-app lead placement tutorial

User Interface

Touchscreen	• 1-2-3 operation • Context-sensitive application • Ultra-wide viewing angle • Wet finger, glove technology
Gesture & Navigation	• "Swipe" to scroll, such as worklist, ECG report list, Prior ECG list. • "Pinch" to zoom-in/zoom-out, such as ECG preview screen. • 300% waveform enlargement
Screen adjustability	**Option A01:** • Display Tilt: Range from -8° to 90° • Arm Tilt: Range from 0° to 90° **Option A02:** • Display Tilt: Range from -8° to 90° • Arm Tilt: Range from 0° to 90° • Swivel: Range from -90° to 90° (180 degrees in total)
Digital keyboard	37 unique keyboard locales / character sets supported
Physical keyboard	Standard off-the-shelf keyboard and mouse support via USB ports
Side-by-side viewing	• UI left: Current ECG preview • UI left: Event list • UI left: Archive list • UI left: Worklist • UI background: Waveforms • UI right: Previous ECG(s) preview • UI right: Event ECG preview • UI right: All archived ECGs preview • UI right: Patient info • UI foreground: Lead map
UI Projection via HDMI	HDMI output to large display for teaching / training

Trolleys (860352, 860353)

Height-adjustment	• 860352: Fixed height • 860353: Adjustable height (25 cm)
Fleet coverage	Above trolleys also compatible with: • Cardiac Workstation 5000 • PageWriter TC70 • PageWriter TC50 • PageWriter TC35
Wheels	• All 4 wheels lock and swivel • Anti-static conductive caster
Desktop	Open desktop workspace
Storage	• Standard storage for 400 extra ECG paper sheets • Standard storage for cleaning wipes/gloves/ electrode gel/gauze, etc • Optional concealed drawer • Optional closable waste bin • Optional wire basket • Optional hanging leadwire holder

Technical Specifications

Display

Size	High-resolution, multi-touch capacitive screen **Option A01:** 15.6 in **Option A02:** 18.5 in
Resolution	1920 (RGB) x 1080 TFT-LCD Module
Luminance	**Option A01:** 360 cd/m2 **Option A02:** 380 cd/m2
Colors	16,700,000
Touchscreen	• Projected capacitive touch panel (PCAP T/P) attached • Optically bonded

Patient Connections

Integrated lead set	• Defib-protected ECG acquisition provides 0.13 µV resolution
Long lead set (H23)	Enable greater distances between cardiograph and patient connections

End Connectors (Adaptors)

Welsh bulbs (E04)	• Six Welsh bulbs and four limb clamps
Snap/Tab adaptor (E06)	• Fits both snap and tab electrodes with metal on both sides

Printer

Resolution	• High-resolution, digital-array using thermal-sensitive paper • 200 dpi (voltage axis) by 500 dpi (time axis) at 25 mm/sec

Connectivity

LAN	10/100 Base-TX IEEE 802.3 ethernet via on-board RJ45
Wireless (D24)	802.11 b/a/g/n/ac (WiFi 5)
Wireless credential (D24)	WPA3 (Personal), WPA2 (Enterprise)
FIPS	Communication supported by FIPS 140-2 certified encryption algorithm
Archive / Internal storage	1,000 ECGs
External storage	1,000 ECGs via USB device

Automated Data Input

1D Bar code reader (H12)	• Reads Code 39 Symbology • Reads up to 80 characters
2D Barcode reader (H17)	• High scan speed • Motion tolerance • Curved surfaces

Configurable Filters

AC noise	50 or 60 Hz
Signal processing	Artifact rejection and baseline wander

Presentation Filters – 10-sec and Rhythm Reports

High pass	0.02, 0.05, and 0.15Hz
Low pass	40, 100, 150 and 300Hz

Electrical

Battery	Lithium ion
Battery capacity[6]	**Option A01:** > 8 hrs continuous operation without printing > 75 ECG reports (6min run, 1-page print, 4min standby) > 2.5 hrs continuous rhythm printing **Option A02:** > 6.5 hrs continuous operation without printing > 70 ECG reports (6min run, 1-page print, 4min standby) > 2 hrs continuous rhythm printing
Battery recharge	4 hrs from 8% to 90% capacity for 2 batteries
Main power	100-240VAC, 50/60Hz
Power consumption	60W max

Battery Management Statistics

Statistics	• Current status • Voltage • Expected max error (%) of charge calculation • Remaining capacity in mAh • Predicted capacity when fully charged • Current charge and state of health % • Charge current: value while charging • Discharge current: value while discharging • Cycle count: number of full charge and discharge cycles • Temperature • Battery unique ID, supplier information, device name, DOM, and SN

Mechanical

Dimensions	**Option A01:** • Open: < 410mm (L) x 335mm (W) x 470mm (H) • Closed: < 410mm (L) x 390mm (W) x 175mm (H) **Option A02:** • Open: < 480mm (L) x 335mm (W) x 505mm (H) • Closed: < 480mm (L) x 430mm (W) x 175mm (H)
Weight	**Option A01:** < 9 kg (excludes battery, lead wires, accessories) **Option A02:** < 11 kg (excludes battery, lead wires, accessories)

Environmental

Operating conditions	• 10° to 40°C (50°F to 104°F) • 10% to 90% relative humidity (non-condensing) • Up to 3,048 m (10,000 ft) altitude
Storage conditions	• -20°C to 50°C (-4°F to 122°F) • 10% to 90% relative humidity (non-condensing) • Up to 4,572 m (15,000 ft) altitude

Cleaning and Disinfecting[7]

Approved solutions	Generic cleaning solutions • Ethanol (ethyl alcohol) 70% (v/v) • Isopropyl alcohol wipes (consisting of 70% solution) • Mild soap and water Branded cleaning solutions • Metrex Caviwipes • Dr. Schumacher Cleanisept Wipes • Clinell Peracetic Acid Wipes • Gama Healthcare Clinell Universal Range • PDI Easy Screen Cleaning® • PDI Sani-Cloth® AF3 • PDI Super Sani-Cloth®

Safety and Performance

International standards and regulations	• General Requirements for Safety IEC 60601-1: 2005+A1: 2012 • Particular Req. for Safety of Electrocardiographs IEC 60601-2-25 2011 Edition 2.0 • Electromagnetic Compatibility IEC60601-1-2 2014

1. New standards for ECG equipment. *Journal of Electrocardiology* 57 (2019) S1–S4.
2. AHA/ACCF/HRS Recommendations for the Standardization and Interpretation of the Electrocardiogram, Part II: Electrocardiography Diagnostic Statement List. *J Am Coll Cardiology*, 2007; 49:1128-135.
3. Fourth Universal Definition of Myocardial Infarction. *Circulation* 2018; 138 (2): pg e618-e651.
4. AHA/ACCF/HRS Recommendations for the Standardization and Interpretation of the Electrocardiogram, Part VI: Acute Ischemia/Infarction. *Circulation*. 2009; 119:e262-e270.
5. When networked with select hospital and departmental solutions, refer to supplier specifications.
6. Performance can vary in different environmental conditions.
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EC REP Shanghai International Holding Corp. GmbH (Europe)
Eiffestrasse 80, 20537
Hamburg, Germany

CE 0123

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