PHILIPS

PageWriter

TC50 Cardiograph

Always **in touch**

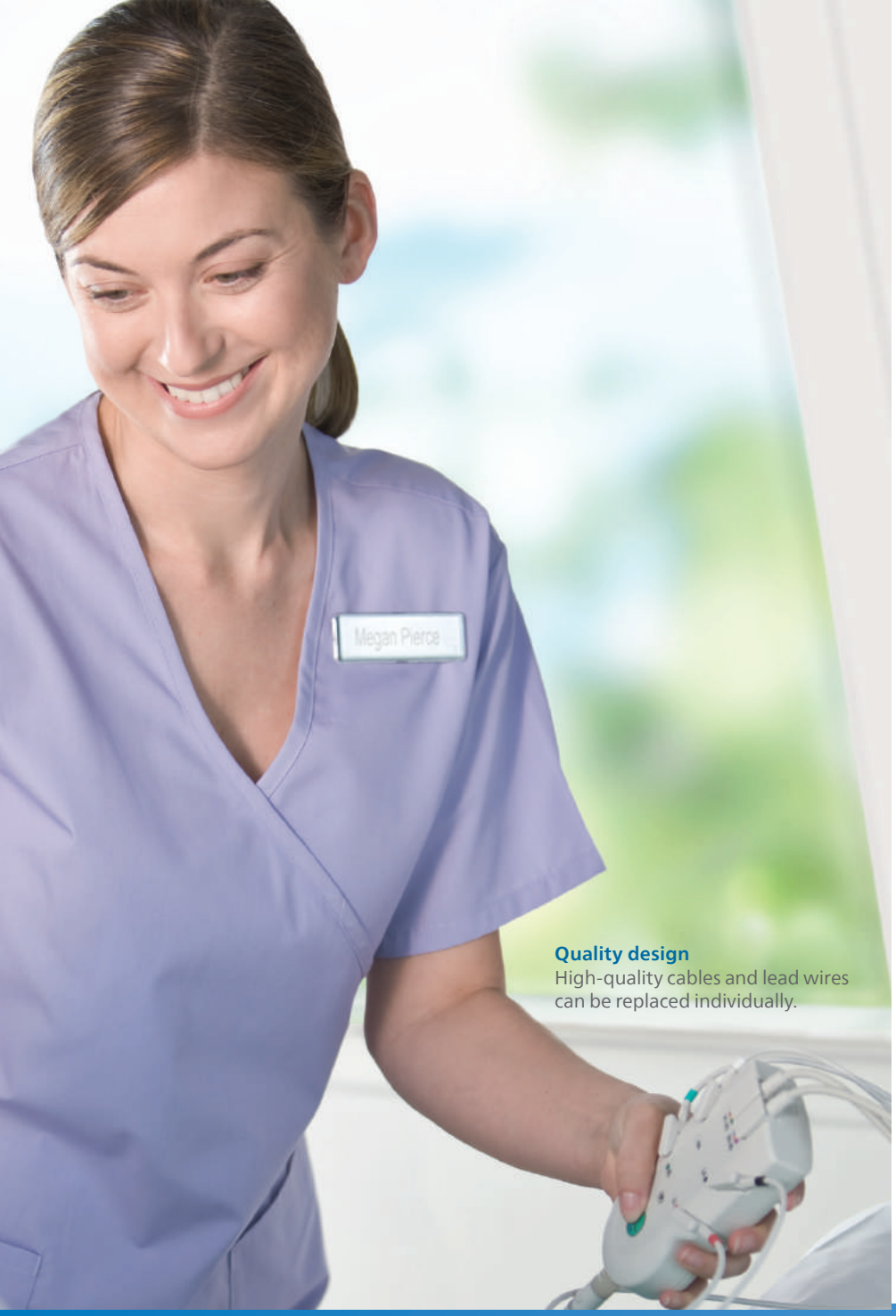
Intuitive and **efficient**

You need to fit a lot into every day. That is why we have fit a lot into the Philips PageWriter TC50 cardiograph. It is an affordable and compact solution, packed with advances to make it easier to help you meet the demands you face every day. Easy to use, it also has the reliability, workflow performance, and clinical support tools to enable you to simply focus on your patients.

Smart, simple, effective
The Philips PageWriter TC50 cardiograph is easy to use from the start.

- Quickly and intuitively attach patient lead wires using the anatomically designed Patient Interface Module
- Easily identify poor or missing electrode connections through color-coded lead traces and lead map
- Efficiently review the full ECG report on the large 10″ touchscreen before printing to save time and paper

Ready to move with you
The PageWriter TC50 is integrated into a rugged, compact trolley for easy mobility and storage.



Quality design
High-quality cables and lead wires can be replaced individually.

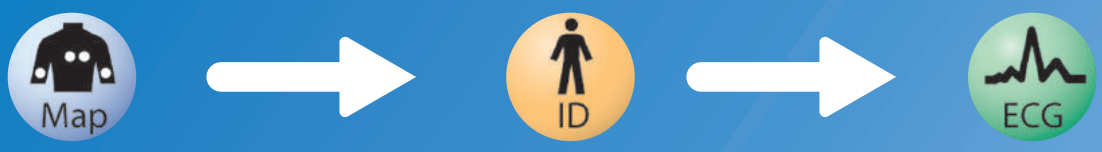
Follow the leads
An anatomical Patient Interface Module mirrors the body, so clinicians can quickly and easily locate the right lead wires – reducing the risk of lead reversal, and therefore supporting accurate lead placement on the patient.

Avoid tangles
Seamless design of the compact leadset the Trident lead system unites three lead wires to reduce tangling and reversals, for easier placement and quicker ECGs.

Just touch it
Take ECGs from the large touchscreen, the keyboard, or the Patient Interface Module with a single touch of the green button.

It is as easy as 1-2-3

User-friendly illuminated buttons speed workflow



Connect Leads
The system will perform quality controls, in the form of lead reversal detection and lead checks (impedance).

Enter ID
The ID button enables electronic data entry, reducing the risk of errors caused by entering information manually. Confirm ID with the barcode scanner, or the IECG or EMR interfaces.

Take ECG
Acquire, analyze, print and transmit data with a single button.
This standardizes your workflow, so that each ECG is captured and screened, and delivers critical, time-sensitive results to clinicians.

Designed around you
The compact system provides advanced features to support a variety of workflows for you.

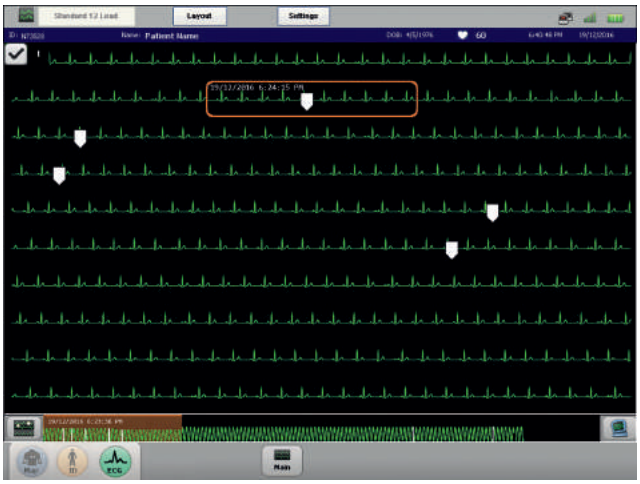
Automatically streamlined

The PageWriter TC50 cardiograph gives you high-level features in a compact package with an attractive, large touchscreen. As your workflow needs evolve, you will find the system is scalable to grow with you, protecting your investment. Compatibility with industry-standard 802.11 wireless protocols enables secure wireless communication to quickly download patient information and send reports to your ECG management system.

Pinpoint concerns
Quickly mark up to 10 different cardiac events for later review with a single touch of the screen.

Never miss a beat
Capture and store 10 minutes of up to 18 leads of waveform data. Capture periodic and intermittent arrhythmias using full disclosure. Select any 10 seconds for a fully interpreted report.

Save it
After up to 20 minutes, cardiac event data is automatically saved in a time capsule, so you do not lose sight of an important clinical episode.



Intellispace ECG Mgmt. System

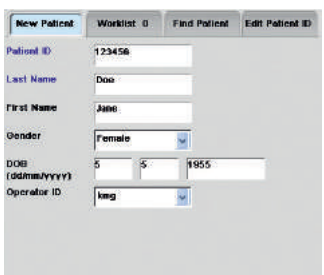
Request ECG studies
Create orders to be fulfilled at the cardiograph, then review, edit, store, and distribute the resulting reports.

Synchronize time
Auto set the PageWriter time with your hospital time master to obtain accurate documentation of your patient's clinical history.

PageWriter TC50 Cardiograph

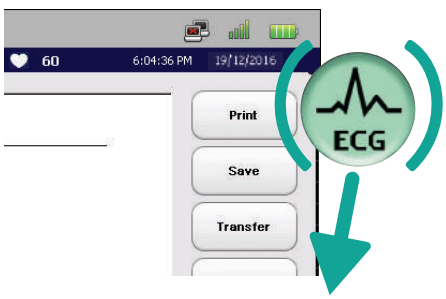
Download orders
Import ECG orders with complete patient information from Philips IntelliSpace ECG (DICOM order manager, EMR).

WiFi Standards
Support for open communication protocols 802.11 (a/b/g/n).



Access ECGs anytime
Ever need a physician to read an ECG 10 minutes after they have left the hospital, or when they are 50 miles away? With TC cardiograph communications capability and ISECG available virtually anywhere (even on a smart phone), your physicians can access ECGs for confirmation, over-reads and consultation around the clock.

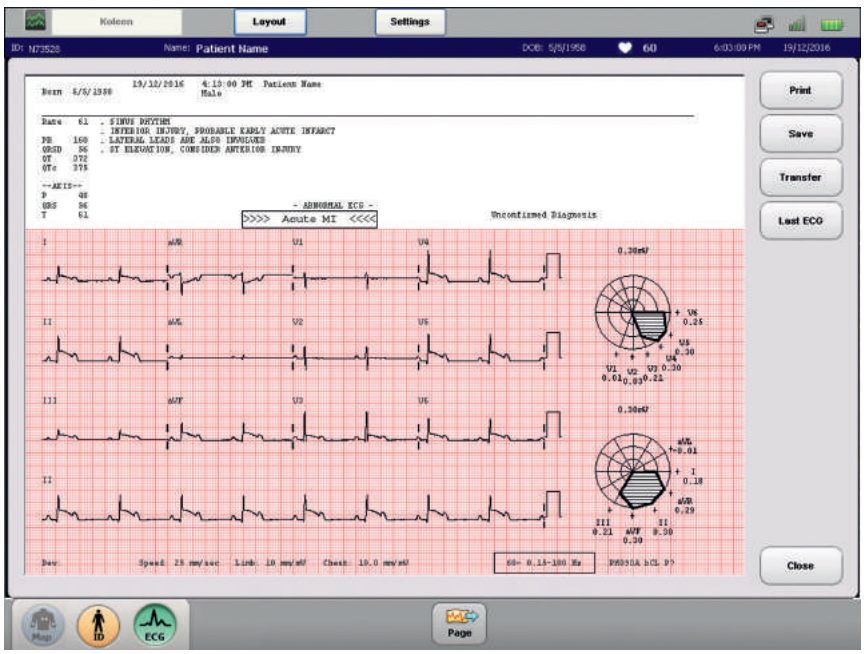
Instant access
Easily acquire or enter patient demographic information by barcode scanning, keyboard entry, worklist download or patient search.



One-touch workflow
With a touch of a button, PageWriter TC50 can be configured to automatically print, save, transfer and retrieve a previous ECG – significantly accelerating your workflow.

Clarity when **it matters most**

Clinical decision support means the right information at the right time presented with clarity to help guide the most productive course of action. All PageWriter TC cardiographs include the clinical excellence of the DXL ECG algorithm which is built upon over 45 years of research and experience, and provides continuity and consistency in ECG reading and diagnosis through all PageWriter products and the IntelliSpace ECG management system. The Philips DXL 18-Lead ECG Algorithm provides industry-leading ECG interpretations, particularly with respect to pediatric analysis, pacemaker pulse detection, QT measurements, and a suite of advanced STEMI decision support tools to help guide the treatment of patients with chest pain.



Reveal more
Unique DXL ECG Algorithm offers interpretation of up to 18 leads to enable a more complete view of the heart.

ST Map
At a glance, get a clear indication of ST elevation for quick triage.

Critical Values
Quickly identify patients that need urgent care in support of Joint Commission Patient Safety goals.

STEMI-CA
Culprit artery criteria provide an indication of which artery may be occluded to help you manage your cath lab interventions.

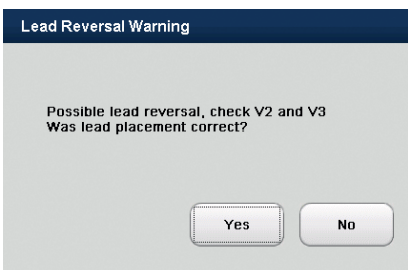
Clinically significant
The previous ECG can be automatically retrieved at the bedside, because a cardiac event is dynamic, with clinical decisions changing frequently during an encounter.

Gender-accurate analysis
Differentiated criteria to help interpret cardiac symptoms in women, including identification of ischemia.

Up-to-date statements
Enhance consistency of care with terminology that conforms to ACC/AHA recommendations.

Check and confirm quality
Preview ECG waveforms and interpretation on the 10-inch touchscreen to check for signal quality before printing.

Be sure
Unique LeadCheck software tests for 20 different lead reversals to help you be sure of capturing a diagnostic quality ECG.



Stay connected
PageWriter TC50 fits easily into your existing IT infrastructure, and supports WiFi 802.11 a/b/g/n. So you stay connected – without being locked in.

Maintain security
The PageWriter TC50 delivers secure, wireless connectivity via standard LAN protocols like 802.11(i) and WPA2 to protect the privacy of patient, staff, and financial information.

PageWriter TC50 benefits

Clinicians
- Simple 1-2-3 process
- 3-in-1 Trident lead wires minimize tangling
- Mark events within 20 minutes of patient's ECG
- Anatomic PIM design supports correct lead placement

Department Managers
- Automated sequence speeds workflow
- Critical Values identify patients who need urgent attention
- LeadCheck reveals lead reversals at the bedside
- Solution supports consistent, standards-based workflow and terminology

Cardiologist
- Integrated interpretation of up to 18 leads
- Advanced STEMI diagnostic tools
- Previous ECGs aid clinical diagnosis

IT Administrator
- Strong wireless security toolset 802.11(i), WPA2
- Connectivity using industry standards
- Built on a native XML format

PageWriter TC50 Cardiograph (860310)

Features

Regulatory clearances

- CE Mark cleared: 2018
- FDA cleared: 2020

ECG functions

Simultaneous lead acquisition	Up to 18 leads
ECG Reports: 12 Lead	3×4, 3×4 1R, 3×4 3R, 3×4 1R plus ST maps, 6×2, 12×1 Standard and Cabrera formats, plus Pan 12 Cabrera
ECG reports: Extended leads	• 3x5, 3x5 1R, 3x5 3R, 4x4, 4x4 1R, 6x2 1R • Standard and Cabrera formats, plus Pan 12 Cabrera
Standard measurements	• Ten interval, duration, and axis measurements • Configurable QT correction method
Rhythm strips	Up to 18 configurable leads
Disclosure	• 20 minute history of up to 18 leads • Complete ECG report of any selected 10 seconds
Event marking	• 10 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 500Hz of 10 seconds for up to 18 leads
Data format	PDF, Philips XML, DICOM General ECG/DICOM 12-Lead ECG/DICOM Encapsulated PDF formats

Philips DXL ECG Algorithm 18-lead

Interpretive statements	• >600 interpretive statements • Integrated pediatric analysis
Leads used in diagnosis	Standard 12 leads plus V3R, V4R, V5R, V7, V8, and V9
Borderline statement suppression	Three configurable settings
Extended measurements	• 46 measurements of morphology analysis in each of the 12 leads • 21 parameters of rhythm analysis
Reasons	Selectable explanations of all interpretive statements
Nomenclature	Aligned with 2007 AHA/ACCF/HRS Recommendations, Part II[1]

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 leads
Unique posterior MI statements	• 16 statements called by posterior leads
Age and gender criteria	Based upon Fourth Universal Definition of Myocardial Infarction, 2018[1]
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[2]
Critical Values	Highlights four conditions requiring immediate clinical attention

Wide QRS correction

QTc measurements	Bazett Fridericia Hodges Framingham
Wide QRS correction	Rauthaharju

Advanced bi-directional network communications[3]

Central time management	Time can be manually or automatically synchronized to a Network Time Server
Last ECG order (requires IntelliSpace ECG)	• Automated retrieval of previous ECG • Configurable rules to retrieve cardiograph-specific Worklists
Orders worklist (D01)	• Download of orders worklist from networked server • 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 (D02)	• 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
DICOM ECG result output (D08)	• Create DICOM 12-lead ECG • Create DICOM General ECG • DICOM Encapsulated PDF

Privacy and Security

User authentication via AD/LDAP	
Data encryption at rest (SHA-256 and AES-128)	
Network access initiated only by PageWriter	
Support TLS 1.2 or greater for communications within hospital network	
Security configuration capabilities behind customer-defined password	• USB port access (on/off) • HTTP vs. HTTPS • Encryption at rest (on/off) • Delete archived ECG after transfer (on/off) • User Authentication (on/off) • Consistent security approach across PageWriter TC series – TC70, TC50, TC30, TC20, TC10 • Device Management Dashboard available to manage configurations and software revisions centrally

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

User training and self help

Training mode	Integrated waveform simulation

User interface

Touchscreen	• 1-2-3 operation • Context-sensitive application • Five-wire, resistive touchscreen
Keyboard	• Backlit 1-2-3 buttons • 65-button, standard full alphanumeric keyboard • Special characters supported
Membrane keyboard cover	Silicone-based flexible cover protects keyboard from particulate and liquid ingress

Integration with Philips Device Management Dashboard*

- Remotely manage Philips cardiographs and Efficia/ SureSigns/EarlyVue monitors across facilities
- Update and harmonize clinical settings efficiently
- View technical alerts, system status, software versions, and configurations quickly
- Access current technical and network status
- Diagnose and troubleshoot issues remotely
- Update software and device configuration settings remotely

* Device Management Dashboard is a separately purchased solution

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Technical Specifications

Display

Size	10.4in TFT
Resolution	Active matrix 800 x 600 SVGA
Colors	64K colors
Screen adjustability	127 degree (+/- 5 degree) tilt

Patient connections

Integrated lead set	• Defib-protected ECG acquisition provides 1µV resolution • Acquire data at 8,000 samples per second, per lead wire
Long lead set (H23)	Extended-length lead wires enable distance between the cardiograph and the 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 printer using thermal-sensitive paper; 200dpi (voltage axis) by 500dpi (time axis) at 25mm/sec
Paper sizes	Z-fold letter and A4

Connectivity

LAN	10/100 Base-TX IEEE 802.3 ethernet via on-board RJ45
Wireless (D24)	802.11 a/b/g/n
Wireless credential (D24)	WPA2 - Personal WPA2 - Enterprise
FIPS	Communication supported by FIPS 140-2 certified encryption algorithm
Archive / Internal storage	200 ECGs
External storage	200 ECGs with optional USB device

Automated data input

1D Bar code reader (H12)	• Reads Code 39 Symbology • Flexible field data entry
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 reports

High pass	0.05, 0.15, and 0.5 Hz
Low pass	40, 100, and 150 Hz

Presentation filters – rhythm

High pass	0.05, 0.15, and 0.5 Hz
Low pass	40, 100, and 150 Hz

Electrical

Battery	Lithium ion; 2 modules; hot swappable with direct access. 2nd battery optional (H15)
Battery capacity[4]	• 8 hours of normal operation, producing 58 printed ECG reports, on 1 charge of 1 battery. • 16 hours of normal operation, producing 116 printed ECG reports, on 1 charge of 2 batteries. • Normal operation to produce printed reports defined as: display is illuminated, keyboard in use, leadwires placed, ECG recorded and report printed. • Printed report count based on following report cycle: 4 min. run, print 1 page, 4 min. standby.
Battery recharge	With 1 battery, less than 4 hours to at least 90% capacity. With 2 batteries, less than 8 hours to at least 90% capacity.
AC power	100-240 Vac, 50/60 Hz

Battery management statistics

Statistics	• Current status • Voltage • Expected max error (%) of charge calculation • Predicted capacity when fully charged • Remaining capacity in mAh • 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, vendor information, device name, DOM, and SN

Mechanical

Dimensions	Length: 310 mm (12.2 in.) Width: 405 mm (15.94 in.) Height: 130 mm (5.11 in.)
Weight	9 kg (19.84 lbs.)

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

Safety and performance

International standards and regulations	• General Requirement for Safety IEC 60601-1:2005 +A1:2012 • Particular Requirement for Safety of Electrocardiographs IEC 60601-2-25 2011 edition 2.0 • Electromagnetic Compatibility IEC 60601-1-2 2014

1 Fourth Universal Definition of Myocardial Infarction. Circulation 2018; 138 (2): pg e618 -e651.
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 When networked with select hospital and departmental solutions; refer to supplier specifications
4 Performance can vary in different environmental conditions

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