

CARDIOLOGY & SPIROMETRY





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Based on many years of standing experience in manufacturing, design and sale of safe and reliable equipment, BTL offers its customers the broadest range of cardiology and physiotherapy products. This catalogue presents a complete line of products for cardiology:

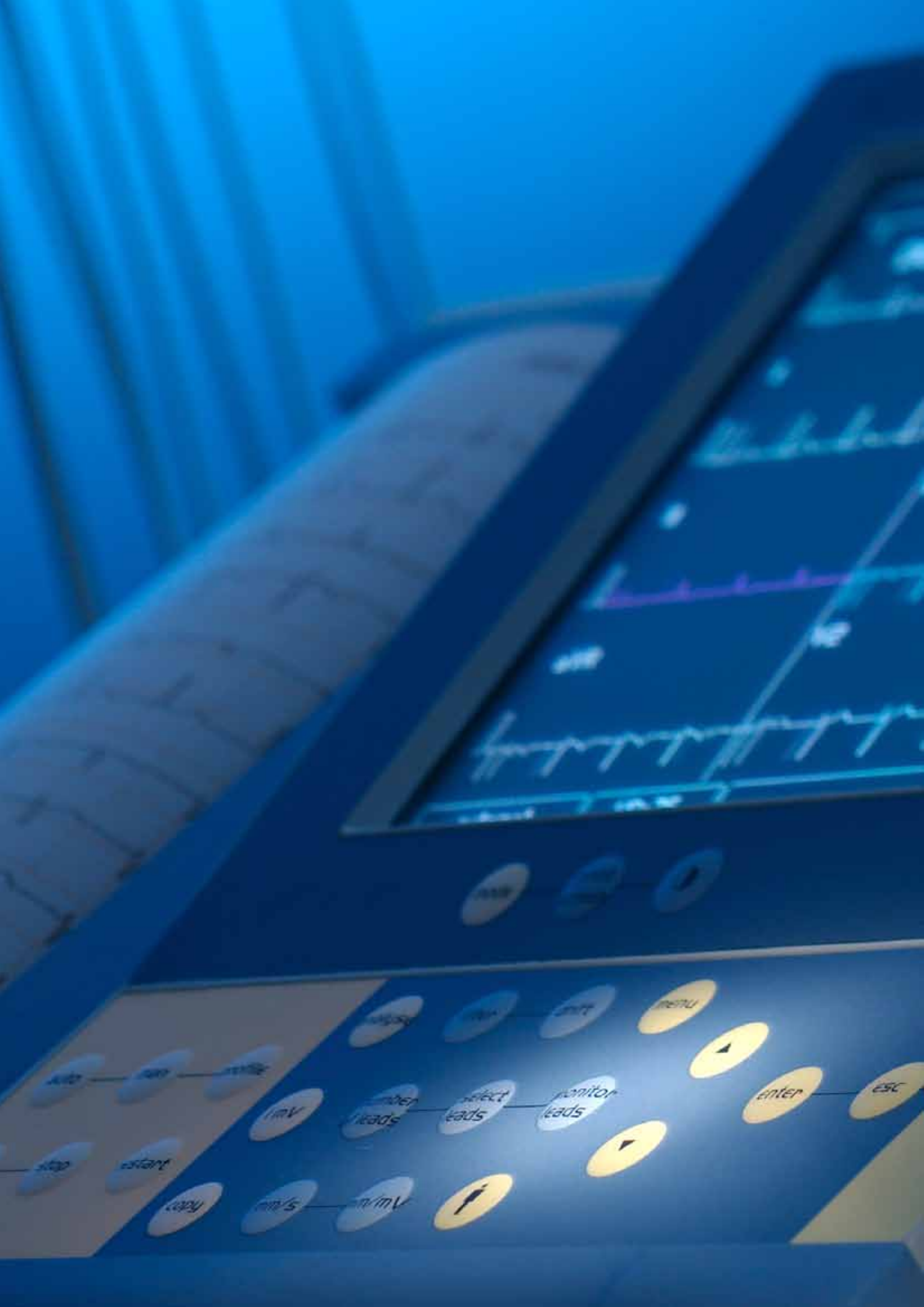
- ◇ 1, 3, 6 and 12-channel electrocardiographs
- ◇ Stress-test systems
- ◇ ECG Holter monitors
- ◇ Ambulatory blood pressure monitors
- ◇ Spirometers

The BTL cardiology products stand out for their fast and easy operation, top parameters, modern functional design, and reliability. Reflecting the latest trends in cardiology and providing an excellent price/performance ratio, the units are an ideal investment for medical professionals.

The product line contributes to our goal: manufacturing highly competitive yet affordable products and providing excellent customer care support to our customers world-wide.

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1

2

3

copy

paste

shift

menu

▲

enter

esc

1 mV

number leads

select leads

monitor leads

▼

copy

5 mm/s

1 mV

▲

stop

start

stop

start

RESTING ECGs

BTL-08 L-LINE

HIGH-END PRINTOUTS AND WIFI&LAN COMMUNICATION OPTION

The L-Line 12-channel ECGs are professional electrocardiographs designed especially for cardiology departments and clinics. Manufactured using the latest technology available, the products stand out because of their modern design, functionality, and easy operation. The large colour touch-screen, high quality printouts and the possibility to combine them with the Spirometry Module makes it a suitable device for even most demanding experts.

KEY FEATURES

- ◇ 8.4" (LC models) and 5.7" (LT models) large color touch-screen
- ◇ A4 print (LC Plus & LT Plus models) on Z-fold thermal paper
- ◇ Battery or mains power options

FUNCTIONALITY

- ◇ Auto-adaptive filters for outstanding signal quality
- ◇ Loose leads indicator
- ◇ Auto, manual and user-defined profiles
- ◇ Alpha-numeric keyboard
- ◇ Pacemaker detection

CONNECTIONS & UPGRADES

- ◇ LAN&WiFi communication upgrade
- ◇ Connection to BTL CardioPoint PC software
- ◇ Direct USB connection to external printer
- ◇ Possibility to combine with the Spirometry Module
- ◇ Vacuum electrode system connection
- ◇ Diagnostics upgrade (includes analysis and text interpretation)



BTL-08 LC & LC Plus
12-CHANNEL ECG WITH 8.4" COLOUR TOUCH SCREEN

BTL-08 LT & LT Plus
12-CHANNEL ECG WITH 5.7" COLOUR TOUCH SCREEN

RESTING ECGs

BTL-08 M-LINE

ADVANCED FEATURES IN A COMPACT DESIGN

The BTL-08 MT Plus ECGs have all of the advanced features of the L-Line models but in a smaller and lighter design. This is the ECG device suitable for a broad spectrum of users. Color touch-screen, high-quality printouts and the spirometry option make it a powerful, but yet still easily-operated device.

BTL-08 MD models are clearly distinguished by the alpha-numeric keyboard. This allows the simple and comfortable entry of the patients' data. The display shows one selected ECG channel together with all the important information about chosen profile, applied filters, etc. Future diagnostics upgrade is also possible.

KEY FEATURES

- ◇ 5.7" color touch-screen (MT Plus model), 1-channel LCD display (MD, MD3 models)
- ◇ 112mm printouts
- ◇ Battery or mains power options

FUNCTIONALITY

- ◇ Auto-adaptive filters for outstanding signal quality (MT Plus model)
- ◇ Loose leads indicator
- ◇ Auto, manual and user-defined profiles
- ◇ Alpha-numeric keyboard
- ◇ Pacemaker detection

CONNECTIONS & UPGRADES

- ◇ LAN&WiFi communication upgrade (MT Plus model)
- ◇ Connection to BTL CardioPoint PC software
- ◇ Direct USB connection to external printer (MT Plus model)
- ◇ Possibility to combine with the Spirometry Module (MT Plus model)
- ◇ Vacuum electrode system connection
- ◇ Diagnostics upgrade (includes analysis and text interpretation)



BTL-08 MT Plus
12-CHANNEL ECG WITH 5.7" COLOUR TOUCH SCREEN



BTL-08 MD/MD3 ECG
3 & 12-CHANNEL ECG WITH GRAPHIC DISPLAY

RESTING ECGs

BTL-08 S-LINE

LIGHTWEIGHT AND PORTABLE

The BTL-08 S-Line ECGs are best known for their portability and their long-term operation in battery mode. The LCD display allows to observe the one selected channel and other related information such as paper speed, amplitude, etc. As with all of the BTL ECGs, the user's comfort is ensured by the one-touch operation and the easy-to-use menu.

The BTL-08 SD1 ECG is the simplified version of the SD3 model. It features the same lightweight design making it highly portable. The 1-channel LCD display allows checking the signal quality and applied settings (profile, filters, etc.). By upgrading this ECG to the SD3 model, it is also possible to connect it to supported computer software.

KEY FEATURES

- ◇ 1-channel LCD display
- ◇ 58mm printouts
- ◇ Battery or mains power options
- ◇ Portability

FUNCTIONALITY

- ◇ Loose leads indicator
- ◇ Auto, manual and user-defined profiles
- ◇ Alpha-numeric keyboard
- ◇ Pacemaker detection

CONNECTIONS & UPGRADES

- ◇ Connection to BTL CardioPoint PC software (except for the SD1 model)
- ◇ Vacuum electrode system connection
- ◇ Diagnostics upgrade (includes analysis and text interpretation)



BTL-08 SD3 & SD6
3 & 6-CHANNEL ECG WITH GRAPHIC DISPLAY



BTL-08 SD1
1-CHANNEL ECG WITH GRAPHIC DISPLAY

	BTL-08 LC Plus	BTL-08 LC	BTL-08 LT Plus	BTL-08 LT
EXTERNAL UNIT				
Display	colour touch screen 8.4"	colour touch screen 8.4"	colour touch screen 5.7"	colour touch screen 5.7"
Dimensions of display (mm)	171 × 128	171 × 128	118 × 89	118 × 89
Screen resolution (dots)	640 × 480	640 × 480	640 × 480	640 × 480
Keyboard	combined alphanumeric and functional, touch screen buttons			
Electrode contact control	indication of contact of each electrode			
Interface	RS 232, USB LAN (optional), WiFi (optional)	RS 232, USB LAN (optional), WiFi (optional)	RS 232, USB LAN (optional), WiFi (optional)	RS 232, USB LAN (optional), WiFi (optional)
Dimensions (mm)	407 × 312 × 146	407 × 312 × 125	407 × 312 × 146	407 × 312 × 125
Weight Approx. (kg)	5.9	5.7	5.9	5.7

PRINTER				
Paper width (mm)	210	210	210	210
Paper type	roll, fax, A5 z-folded, A4 z-folded / A4-office paper	roll, fax, A5 z-folded / A4-office paper	roll, fax, A5 z-folded, A4 z-folded / A4-office paper	roll, fax, A5 z-folded / A4-office paper
Print type	thermal / external laser or ink. printer			
Paper speed (mm/s)	5, 10, 25, 50	5, 10, 25, 50	5, 10, 25, 50	5, 10, 25, 50

SIGNAL PROCESSING				
Number of channels	12	12	12	12
Number of leads	12	12	12	12
Displayed leads	3, 6, 12	3, 6, 12	3, 6, 12	3, 6, 12
Printed leads	3, 4, 6, 12, 3×4+1, 3×4+2, 3×4+3, 4×3+1, 6×2+1, 6×2+2	3, 4, 6, 12, 3×4+1, 3×4+2, 3×4+3, 4×3+1, 6×2+1, 6×2+2	3, 4, 6, 12, 3×4+1, 3×4+2, 3×4+3, 4×3+1, 6×2+1, 6×2+2	3, 4, 6, 12, 3×4+1, 3×4+2, 3×4+3, 4×3+1, 6×2+1, 6×2+2
Transmission in automatic mode	real-time, synchronic	real-time, synchronic	real-time, synchronic	real-time, synchronic
Pacemaker detection	yes	yes	yes	yes
Sensitivity (mm/mV)	2.5, 5, 10, 20	2.5, 5, 10, 20	2.5, 5, 10, 20	2.5, 5, 10, 20
Stored records (10-sec long strips)	120	120	120	120
Long ECG recording 1 lead / 2 leads (min)	10/10	10/10	10/10	10/10

DIGITAL FILTERS				
Adaptable mains filter (Hz)	50–60	50–60	50–60	50–60
Muscle tremor filters (Hz)	35, 25	35, 25	35, 25	35, 25
Baseline filters (Hz)	0.05 (3.2 s), 0.11 (1.5 s), 0.25 (0.6 s), 0.50 (0.3 s), 1.50 (0.1 s), splines			
Automatic	auto-adaptive	auto-adaptive	auto-adaptive	auto-adaptive

USER-DEFINED PROFILES				
No. of profiles for auto. and man. mode	unlimited	unlimited	unlimited	unlimited
No. of profiles for long ECG recording	unlimited	unlimited	unlimited	unlimited

SUMMARY OF AVAILABLE OPTIONS				
Extension of channels	–	–	–	–
Diagnostics (includes: averaging, analysis, text interpretation)	optional	optional	optional	optional
PC connection with software BTL CardioPoint-ECG	optional	optional	optional	optional
Ergometry with software BTL CardioPoint-Ergo	optional	optional	optional	optional
WiFi & LAN communication with PC	optional	optional	optional	optional

TECHNICAL SPECIFICATIONS				
Mains supply	100 V–230 V, 50–60 Hz			
Frequency response	0.04 Hz–150 Hz			
Digital resolution	3.9 µV			
A/D conversion	13 bits			
Sampling frequency	2000 Hz			
Dynamic range	15.9 mV			
Polarisation voltage	± 400 mV			
Max. consistent voltage	± 5 V			
Input impedance	> 20 MOhm			
Common mode rejection	> 100 dB			
Safety standards	IEC 601-1, IEC 601-2-25, IEC 601-1-2, IEC 601-1-4, ISO 14971			
Accumulator capacity	automat: up to 50 prints manual: up to 35 minutes of printing signal monitoring: up to 120 minutes			
Charging time	approx. 4–6 hours (if completely discharged)			
Protection class	II according to IEC 536			

	BTL-08 MT Plus	BTL-08 MD3/MD	BTL-08 SD6	BTL-08 SD1/SD3
EXTERNAL UNIT				
Display	colour touch screen 5.7"	graphic display	graphic display	graphic display
Dimensions of display (mm)	118 × 89	70 × 36	70 × 36	70 × 36
Screen resolution (dots)	640 × 480	128 × 64	128 × 64	128 × 64
Keyboard	combined alphanumeric and functional touch screen buttons	combined alphanumeric and functional	combined alphanumeric and functional	combined alphanumeric and functional
Electrode contact control	indication of contact of each electrode			
Interface	RS 232, USB LAN (optional), WiFi (optional)	RS232, USB reduction	RS232, USB reduction	RS232, USB reduction
Dimensions (mm)	330 × 270 × 74	330 × 270 × 74	276 × 168 × 74	276 × 168 × 74
Weight Approx. (kg)	3.2	3.2	2	2

PRINTER				
Paper width (mm)	112	112	58	58
Paper type	roll / A4-office paper	roll	roll	roll
Print type	thermal / external laser or ink. printer	thermal	thermal	thermal
Paper speed (mm/s)	5, 10, 25, 50	5, 10, 25, 50	5, 10, 25, 50	5, 10, 25, 50

SIGNAL PROCESSING				
Number of channels	3, 6, 12	3/6, 12	3, 6	1/3
Number of leads	12	12	12	12
Displayed leads	3, 6, 12	1	1	1
Printed leads	3, 4, 6, 12, 3x4+1, 3x4+2, 3x4+3, 4x3+1, 6x2+1, 6x2+2	3/3, 6, 12	1, 3, 6	1/1, 3
Transmission in automatic mode	real-time, synchronic	real-time, synchronic	real-time, synchronic	real-time, synchronic
Pacemaker detection	yes	yes	yes	yes
Sensitivity (mm/mV)	2.5, 5, 10, 20	2.5, 5, 10, 20	2.5, 5, 10, 20	2.5, 5, 10, 20
Stored records (10-sec long strips)	120	—/15	6	6
Long ECG recording 1 lead / 2 leads (min)	10/10	9/no	9/no	9/no

DIGITAL FILTERS				
Adaptable mains filter (Hz)	50–60	50–60	50–60	50–60
Muscle tremor filters (Hz)	35, 25	35, 25	35, 25	35, 25
Baseline filters (Hz)	0.05 (3.2 s), 0.11 (1.5 s), 0.25 (0.6 s), 0.50 (0.3 s), 1.50 (0.1 s), splines	0.05 (3.2 s), 0.11 (1.5 s), 0.25 (0.6 s), 0.50 (0.3 s), 1.50 (0.1 s)	0.05 (3.2 s), 0.11 (1.5 s), 0.25 (0.6 s), 0.50 (0.3 s), 1.50 (0.1 s)	0.05 (3.2 s), 0.11 (1.5 s), 0.25 (0.6 s), 0.50 (0.3 s), 1.50 (0.1 s)
Automatic	auto-adaptive	—	—	—

USER-DEFINED PROFILES				
No. of profiles for auto. and man. mode	unlimited	1/5	3	3
No. of profiles for long ECG recording	unlimited	—/5	3	3

SUMMARY OF AVAILABLE OPTIONS				
Extension of channels	—	3–12 / —	—	1–3–6 / 3–6
Diagnostics (includes: averaging, analysis, text interpretation)	optional	optional	optional	—/optional
PC connection with software BTL CardioPoint-ECG	optional	optional	optional	—/optional
Ergometry with software BTL CardioPoint-Ergo	optional	optional	optional	—/optional

	BTL-08 M-line	BTL-08 S-line
TECHNICAL SPECIFICATIONS		
Mains supply	115 V/230 V, 50–60 Hz	115 V/230 V, 50–60 Hz
Frequency response	0.04 Hz–150 Hz	0.04 Hz–150 Hz
Digital resolution	3.9 µV	3.9 µV
A/D conversion	13 bits	13 bits
Sampling frequency	2000 Hz	2000 Hz
Dynamic range	15.9 mV	15.9 mV
Polarisation voltage	± 400 mV	± 400 mV
Max. consistent voltage	± 5 V	± 5 V
Input impedance	> 20 MOhm	> 20 MOhm
Common mode rejection	> 98 dB	> 100 dB
Safety standards	IEC 601-1, IEC 601-2-25, IEC 601-1-2, IEC 601-1-4, ISO 14971	IEC 601-1, IEC 601-2-25, IEC 601-1-2, IEC 601-1-4, ISO 14971
Accumulator capacity	automat: up to 30 prints manual: up to 30min of printing signal monitoring: up to 90min (MT Plus), up to 75min (MD, MD3)	automat: up to 30 prints manual: up to 35min of printing signal monitoring: up to 75min
Charging time	max. 4–6 hours (if completely discharged)	max. 3 hours (if completely discharged)
Protection class	II according to IEC 536	II according to IEC 536



BTL CardioPoint

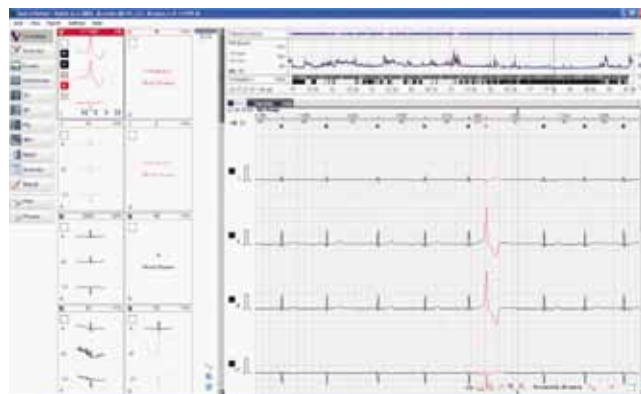
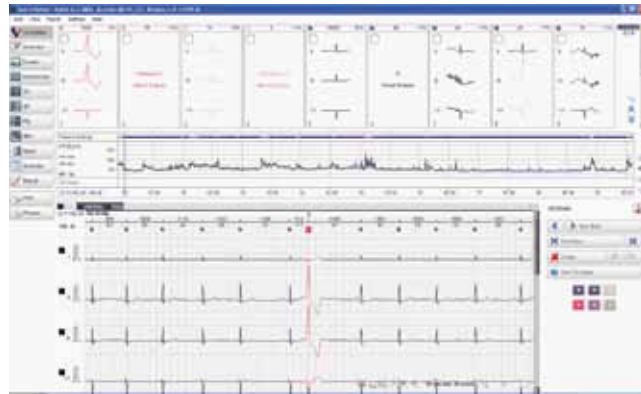
- Stress-test
- ECG Holter
- Resting ECG
- Spirometry
- ABPM

UNIFIED CARDIOLOGY PLATFORM ¹¹

BTL CARDIPOINT

COMPLETE SOLUTION FOR CARDIOLOGY OFFICE

The BTL CardioPoint is a software solution integrating Resting ECG, Stress test, ECG Holter, ABPM and Spirometry into one unified cardiology platform. Having only one database of patients, working within the same style of user-interface, quick and easy back-up process, networking – these are the major advantages of the software. However the BTL CardioPoint offers even more! Absolutely extraordinary feature is the possibility to freely modify the user-interface. Graphs, tables, ECG strips and other windows can be arbitrarily added, moved to desired position or removed as per user's wish. The physician no longer needs to adapt to the software, it is the software which adapts to the user!



MAIN FEATURES & ADVANTAGES

- ◇ Patient & examination data management
- ◇ Customizable user-interface
- ◇ Network operation

SOFTWARE MODULES

- ◇ Resting ECG
- ◇ Stress-test
- ◇ ECG Holter
- ◇ ABPM
- ◇ Spirometry

BTL CardioPoint-Holter

EXAMPLE OF USER INTERFACE CUSTOMIZATION



BTL CardioPoint

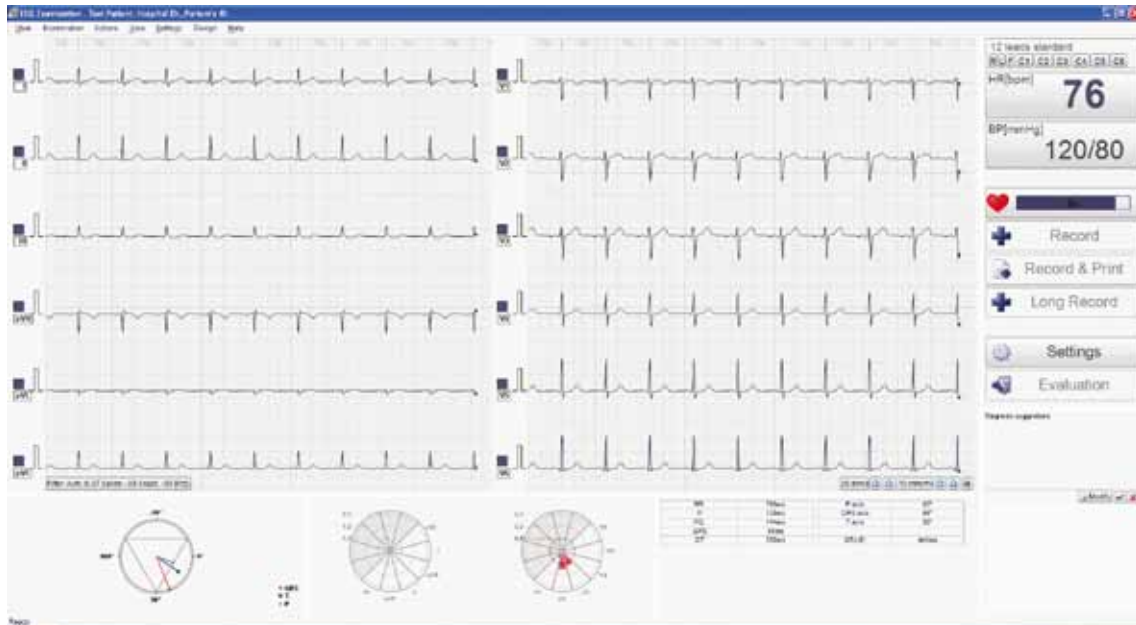
EXAMPLE OF NETWORK OPERATION IN A MEDICAL FACILITY



COMPUTERIZED ECG

BTL CARDIOPOINT-ECG

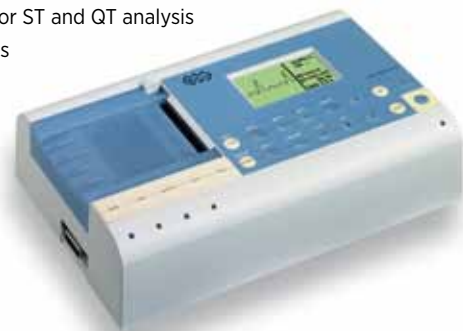
ECG PROFESSIONALLY AND QUICKLY



The BTL CardioPoint-ECG software makes a great addition to any of the BTL ECGs, especially for users who prefer to work with a computer. It acquires the signal online, performs automatic analysis and allows the user to create and modify the final reports. Its incredibly simple operation make it perfect for use in high-traffic facilities, such as emergency rooms.

MAIN FEATURES & BENEFITS

- ◇ 12-channel ECG recoding
- ◇ Fast & easy operation
- ◇ Emergency ECG quicklaunch
- ◇ Long ECG for rhythm monitoring
- ◇ Editable diagnostics
- ◇ Automatic text interpretation
- ◇ Advanced diagnostic tools for ST and QT analysis
- ◇ ECG waveforms comparisons



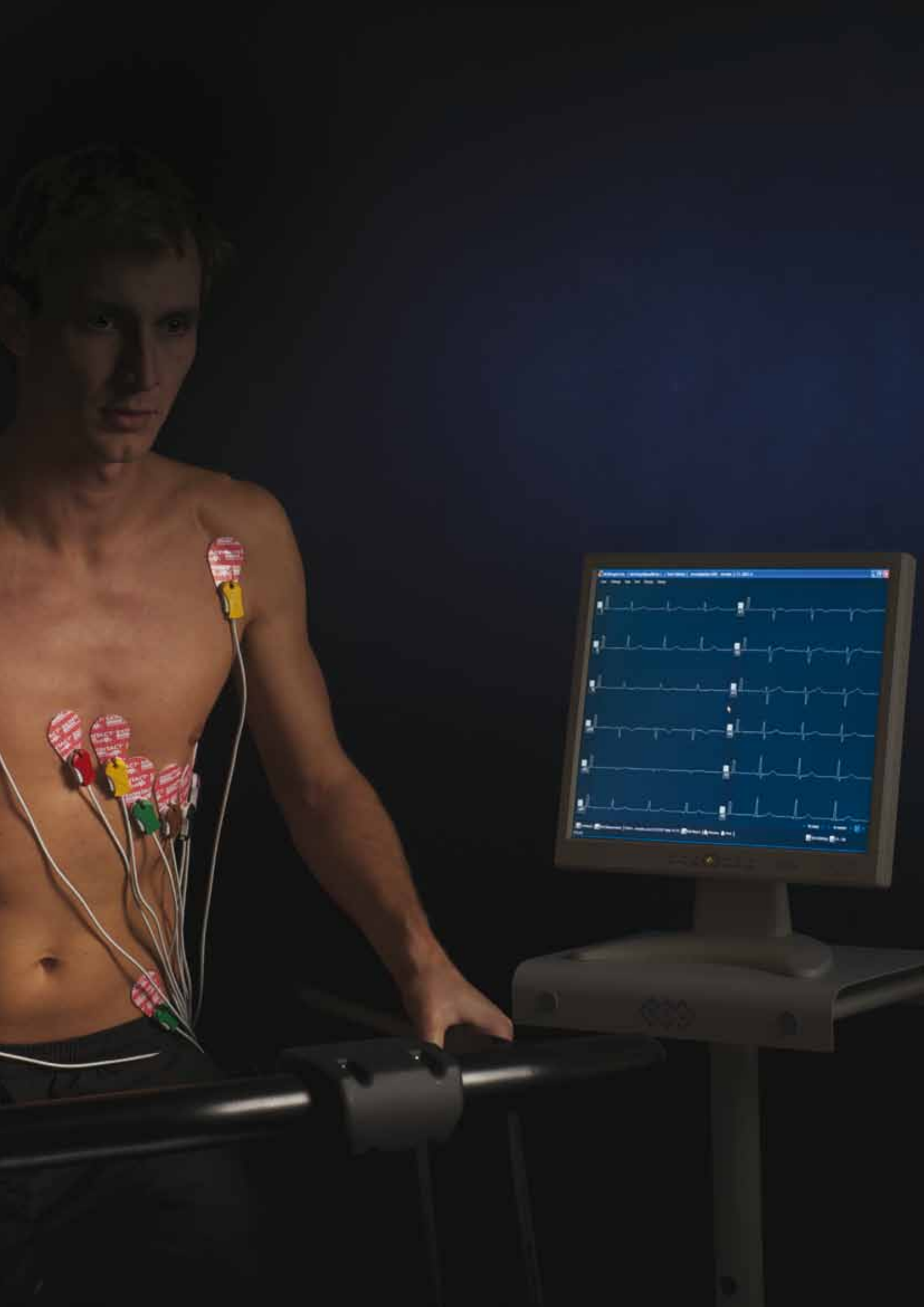
BTL-08 SD3 & SD6
3 & 6-CHANNEL ECG WITH GRAPHIC DISPLAY

BTL CARDIOPOINT-ECG SOFTWARE FEATURES OVERVIEW

The software is offered in two basic editions: The simplified C300 and advanced C600.

	C300	C600
Emergency ECG quicklaunch	○	○
Long ECG monitoring	○	○
Einthoven/Cabrera ECG display	○	○
Electrode application indicator	○	○
Automatic ECG measurements	○	○
Caliper for manual measurements	○	○
Automatic text interpretation		○
QT module		○
ST maps		○
ECG waveforms comparator		○





STRESS TEST

BTL CARDIOPOINT-ERGO

PERFORMING THE STRESS TEST EASILY



The BTL CardioPoint-Ergo launches a new generation of modern computer-based stress test systems. The QT module, the diagnostic score evaluation and the predicted load calculations are just three examples of its “modern” features. Its intuitive and easy-to-use operation makes it suitable for everyday use in hospitals and cardiology clinics. The system is compatible with ergometers and treadmills from world-leading manufacturers.

MAIN FEATURES & BENEFITS

- ◇ 12-channel ECG full-disclosure recording
- ◇ Advanced tools for ST segment monitoring
- ◇ Support of automatic BP and SPO2 measurement
- ◇ Online arrhythmia detection and analysis
- ◇ Maximum load prediction
- ◇ Risk scoring for predicting patient’s mortality
- ◇ QT module for evaluating the risk of sudden cardiac death
- ◇ Optional vacuum electrode system
- ◇ Compatible with all BTL ECGs*
- ◇ Compatible with variety of medical treadmills and ergometers

*except SD1 model



BTL-08 SD3 & SD6
3 & 6-CHANNEL ECG WITH GRAPHIC DISPLAY



BTL CardioPoint-Ergo
MAIN MONITORING SCREEN

ARRHYTHMIA DETECTION & ANALYSIS

BTL CardioPoint-Ergo detects ventricular and supraventricular arrhythmias in form of isolated beats, sequences (couplets, triplets and runs) and alternating arrhythmias (bigeminies and trigeminies). Each time an arrhythmia appears in the signal, an alarm mark is displayed

AUTOMATIC BLOOD PRESSURE & SPO2 MEASUREMENT

In order to maximize the user's comfort, BTL CardioPoint-Ergo supports automatic blood pressure measurement. In the event a Suntech Tango+ or a compatible ergometer with BP option is connected, the blood pressure measurement is performed completely automatically. Besides blood pressure, the SPO2 measurement can be performed completely automatically as well.

ST MAPS

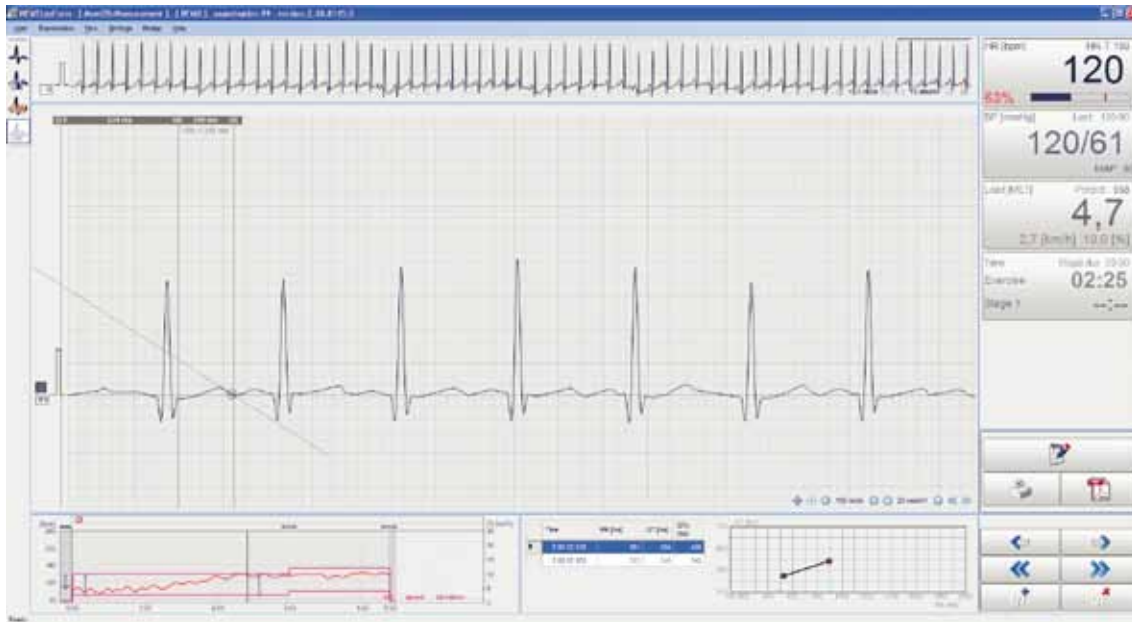
As the ST-segment analysis gives highly valuable information about patient's heart condition, it is a matter of high importance to have effective supportive tools for its clear observation. Besides the traditional averaged beat display and ST trend graph, BTL CardioPoint-Ergo offers the ST map component – a graphic tool displaying a spatial orientation of ST deviations. The ST maps are sorted in Cabrera manner according to spatial orientation of horizontal and vertical heart plane. They are the only way to validate mirrored ST elevation. Typically if leads V1/V2 evince an elevation, leads V5/V6 should show depression.



BTL Treadmill
MOTORIZED STRESS-TEST TREADMILL

COMPATIBILITY WITH TREADMILLS & ERGOMETERS

BTL CardioPoint-Ergo successfully communicates with all major world-famous treadmill and ergometer models.
Treadmills: RAM, Lode, HP Cosmos, Trackmaster
Ergometers: Ergoline, Lode, Monark, Kettler, Seca



BTL CardioPoint-Ergo
QT MODULE SCREEN

QT MODULE

The QT module is a unique tool evaluating the patient's risk of sudden death caused by Long QT syndrome. The results are displayed in the form of curve whose shape and location indicates the survival probability of the patient. The tangent method is a method specifically suitable for QT measurement with higher heart rates when there is no clear return to baseline.

RISK SCORING

The risk scoring tool uses the examination results to predict patient's mortality and define the risk of CAD (coronary arterial disease). Thus, it helps decide which further examinations the patient should undergo.

MAXIMUM LOAD PREDICTION

The software automatically predicts patient's maximum load. It is possible to select among 8 formulas that can be used for the prediction calculation out of which each is suitable for different patients.

BTL CARDIPOINT-ERGO SOFTWARE FEATURES OVERVIEW

The software is offered in two basic editions: The simplified E300 and full-featured E600.

	E300	E600
Automatic BP measurement support	○	○
ST settings - J point position modification	○	○
Stress-test protocol editor	○	○
Trends of HR, ST, BP and load	○	○
Automatic & manual load control	○	○
Electrode application indicator	○	○
Profile creation		○
Signal freeze & review		○
QT module		○
Arrhythmia detection & analysis		○
Risk scoring		○
ST maps		○
Maximum load prediction		○
Switch to Ramp function		○
Caliper for manual measurements		○



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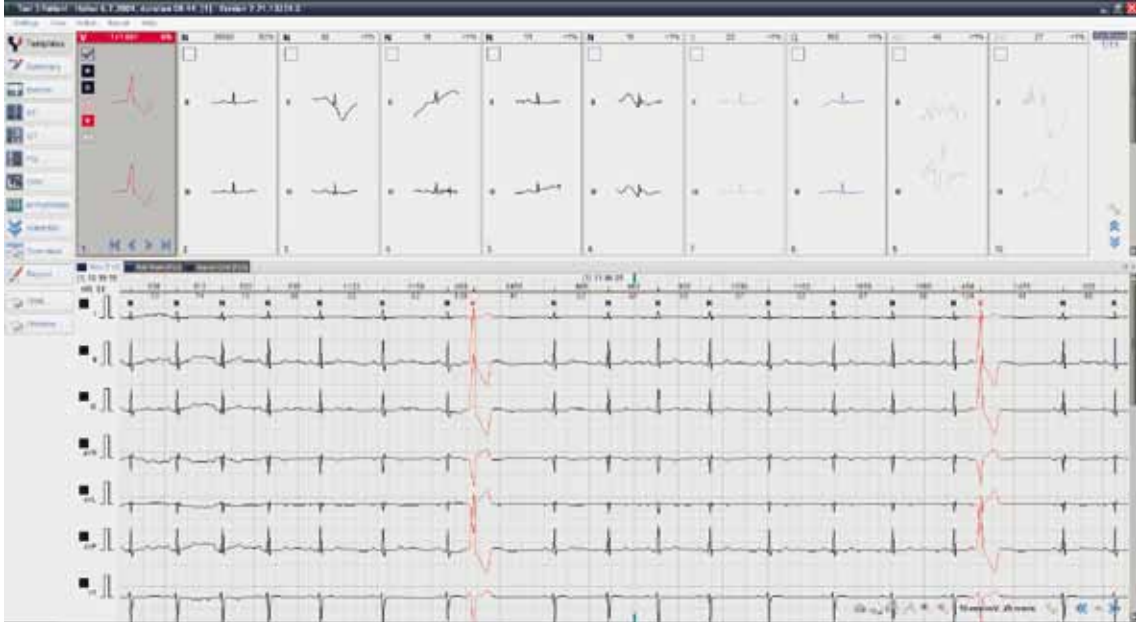


BTL-08 Holter

AMBULATORY ECG

BTL CARDIPOINT-HOLTER

PROFESSIONAL FEATURES AND INTUITIVE USER-INTERFACE



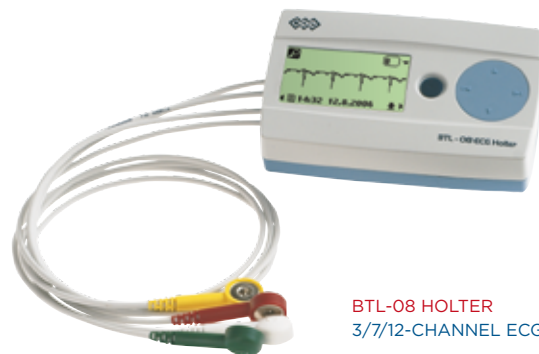
If there is one word that characterizes the BTL Holter system the best, that word is "possibilities." Possibility to record 3, 7 or 12 channels of ECG, select the length of record from 1 up to 7 days, choose the way to start the recording (USB, Bluetooth, SD card), modifying the user interface etc. These are just examples demonstrating the choices the user of BTL Holter has. Moreover, the software brings a completely new approach to Holter ECG examinations by processing the PQ intervals, precisely analyzing pacemaker operation and dealing with beat classifications all by using its special template split tool.

MAIN FEATURES & BENEFITS

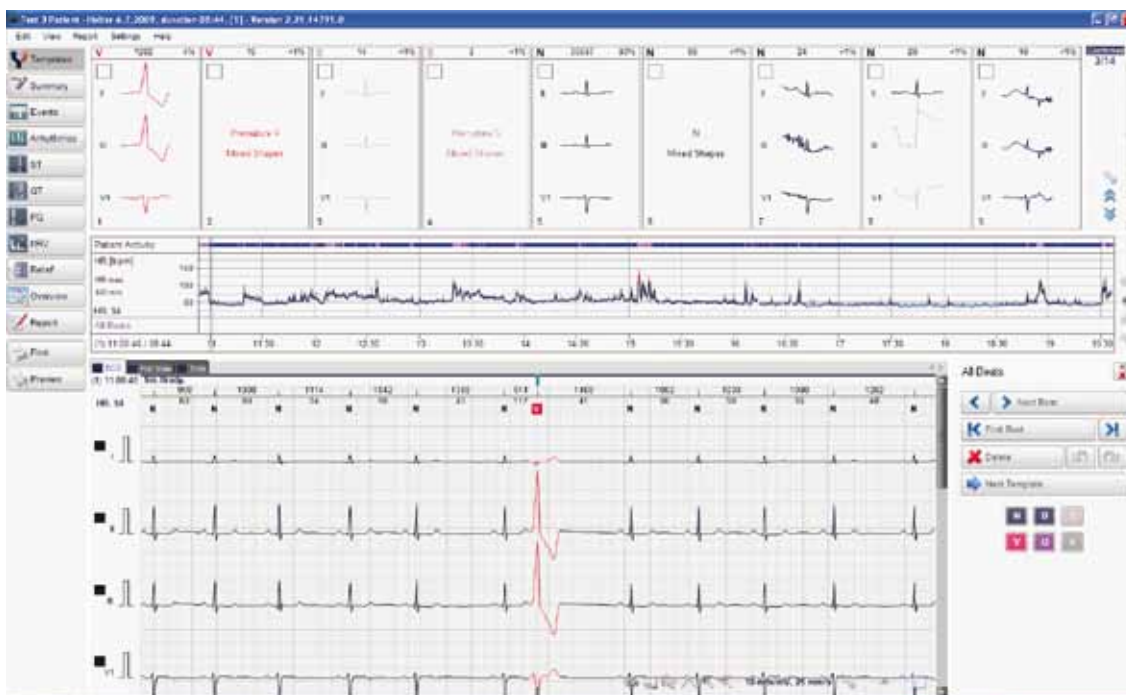
- ◇ 3/7/12-channel ECG recording
- ◇ Up to seven days of recording
- ◇ USB, SD card and Bluetooth connection to computer
- ◇ Inbuilt microphone for voice recording
- ◇ LCD display for checking the signal quality

ADVANCED DIAGNOSTIC TOOLS

- ◇ Multilevel templates
- ◇ Advanced rhythm analysis
- ◇ ST, PQ, QT and HRV analysis
- ◇ Pacemaker analysis
- ◇ Patient activity monitor
- ◇ Relief & Waterfall tools for fast rhythm & morphology changes detection



BTL-08 HOLTER
3/7/12-CHANNEL ECG HOLTER



BTL CardioPoint-Holter
TEMPLATE SCREEN

3/7/12-CHANNEL MONITORING FOR UP TO 7 DAYS

The 12-channels offer the most comprehensive means of finding and tracking complex cardiac issues. The 7-channel monitoring started a new approach to Holter examinations and its popularity stems mainly from the fact only five leads have to be used. The 3-channel recording is suitable for the classic, simplified Holter ECG. Moreover, the BTL Holter allows the monitoring the signal for up to seven days, which is especially helpful when subtle arrhythmias are expected to occur.

TEMPLATE ANALYSIS

The BTL's software not only sorts the heart-beats according to their morphology, it also identifies whether the beats within a template are homogenous or not. A homogenous template only consists of beats having a same shape, while the non-homogenous one may involve beats of various shapes. The non-homogenous templates are then identified with a sign „Mixed Shapes“ and usually require physician's special attention. Such approach to morphology analysis significantly improves physician's work.

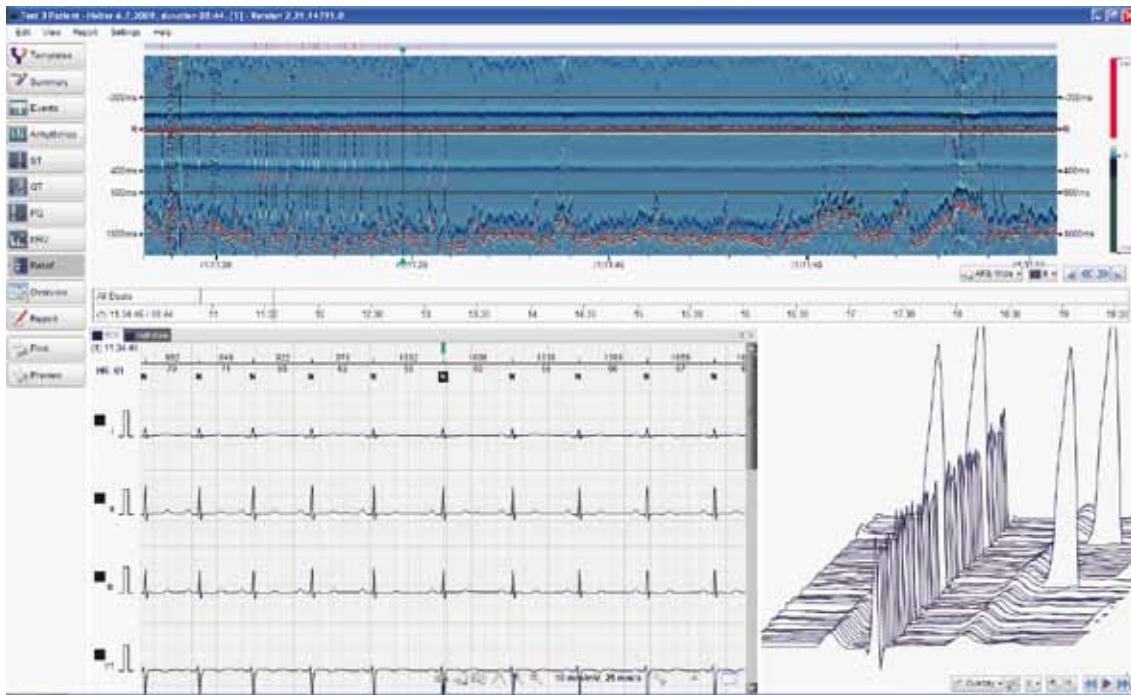
PATIENT ACTIVITY MONITOR

Each BTL Holter recorder has a built-in motion sensor that allows the user to see exactly which time periods the patient was performing some physically-demanding activities. As a result, the graph of patient's activity can be directly correlated with the graph of patient's heart rate and other graphs as well.

ECG HOLTER FEATURES & TECHNICAL DETAILS OVERVIEW

There are three Holter recorders - 3-channel, 3/7-channel and finally 3/7/12-channel.

	3-ch	3/7-ch	3/7/12-ch
Number of channels	3	3/7	3/7/12
Recording time	1-2 days	1-7 days	1-7 days
Patient cable	5 lead	5 lead	5/10 lead
Data transmission	USB, SD card	USB, SD card, Bluetooth	USB, SD card, Bluetooth
LCD screen resolution	128 × 64 dots	128 × 64 dots	128 × 64 dots
Storage capacity	2 GB	2 GB	2 GB
Dynamic Range		± 60 mV	
Digital resolution		1.8 µV/16 bit	
Sampling Frequency		2000 Hz	
Frequency Range		0.05 Hz-150 Hz	
Maximum Electrode Potential		± 400 mV	
Common Mode Rejection		> 65 dB (85 dB typical)	
Pacemaker Detection		± 2 mV/± 0.1 ms	
Batteries	Alkaline 2X AA 1.5 V or 2X Ni-Cd or 1X NiMH 1.2 V		
Dimensions	102 × 62 × 24 mm (4 × 2.44 × 0.94 inches)		
Weight	138 g (4.88 oz)		
Standards Compliance	IEC 601-1, 601-1-2, 60601-2-47		



BTL CardioPoint-Holter
RELIEF SCREEN

RELIEF & WATERFALL

The Relief and Waterfall images provide a simplified, yet really complex, look at an ECG signal. This unique tool allows one to immediately visually analyse all the irregularities that are not typically visible when using traditional methods for ECG signal analysis. The main purpose of both tools is to easily detect Atrial Fibrillation/Flutter and ST segment changes, yet they both are very efficient in revealing any other pathology.

ADVANCED PACEMAKER ANALYSIS

The software offers a clear overview of all paced heartbeats. Furthermore, it provides the user with the advanced analysis (such as fail to capture, fail to sense, etc.). Thus, it can be used for checking the correct functionality of the pacemaker.

PQ ANALYSIS

PQ analysis is a very special tool for analyzing the P-Wave characteristics. It indicates certain ECG strips where there is the possible appearance of various AV conduction blocks.

BTL CARDIOPOINT-HOLTER SOFTWARE FEATURES OVERVIEW

The software is offered in three basic editions: The simplified H100 class, the middle H300 class and full-featured H600 class.

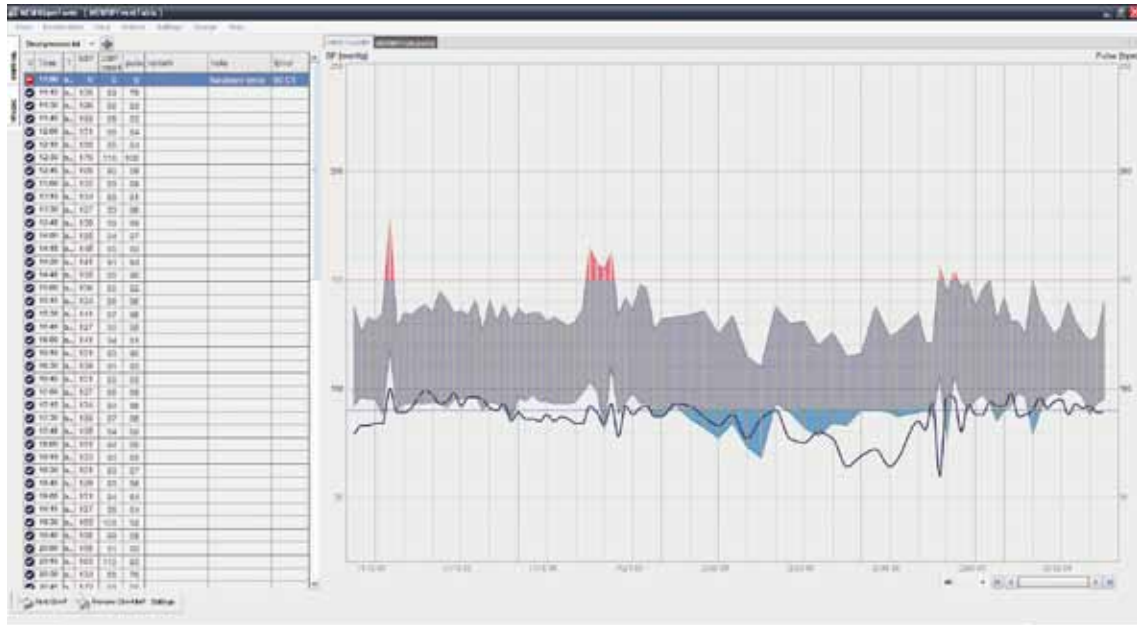
	H100	H300	H600
Multilevel templates	○	○	○
Rhythm analysis	○	○	○
HRV	○	○	○
HRV Plus		○	○
ST	○	○	○
ST Plus		○	○
QT/QTc		○	○
PQ			○
Pacemaker analysis		○	○
Pacemaker analysis Plus			○
Graphical split			○
Patient activity monitor			○
Waterfall			○
Relief map			○



AMBULATORY BP

BTL CARDIOPOINT-ABPM

COMFORTABLE AND PRECISE BLOOD PRESSURE MONITORING



It is very clear why the BTL CardioPoint-ABPM is among the world's most popular blood pressure monitoring devices. Quite simply, it meets all the present specifications for professional monitoring. It is a lightweight recorder, it has silent operation and it comes with easy-to-use software. Furthermore, precise blood pressure measurement is guaranteed by our unique "stepwise deflation" measuring method.

MAIN FEATURES & BENEFITS

- ◇ 24, 27, 48 & 51-hour monitoring
- ◇ BTL's "stepwise deflation" process - giving more precise measurement results
- ◇ Lightweight recorder
- ◇ Silent operation
- ◇ Large LCD display
- ◇ Complies with BHS and AAMI standards
- ◇ Automatic BP interpretation according to AHA, NICE and NHFA



BTL-08 ABPM
AMBULATORY BLOOD
PRESSURE MONITOR

BTL CARDIOPOINT-ABPM FEATURES & TECHNICAL DETAILS OVERVIEW

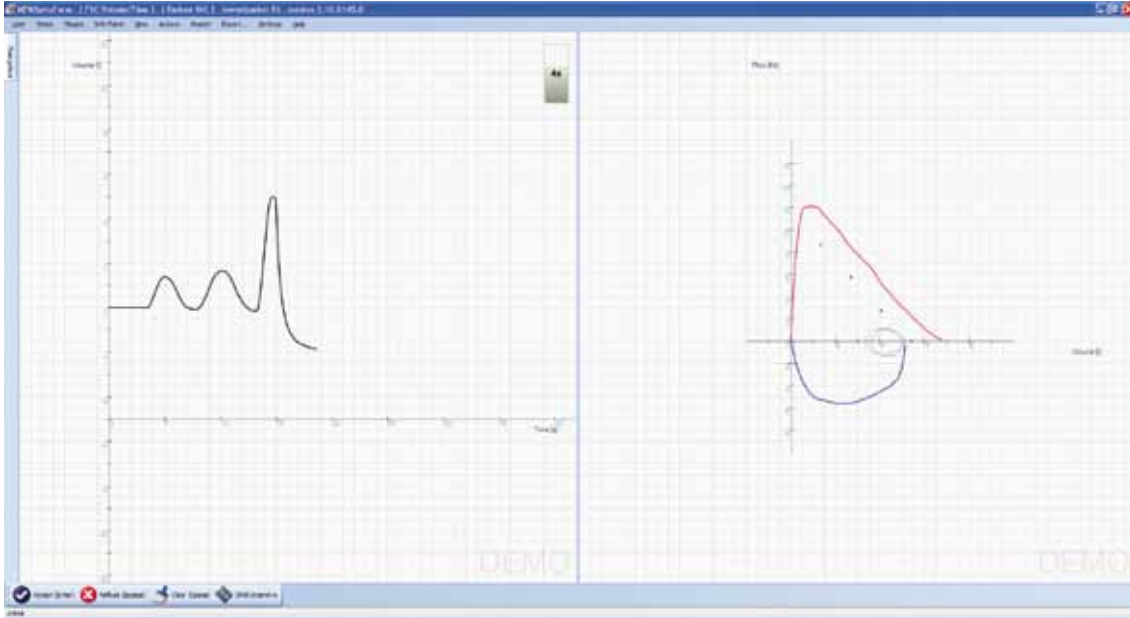
Blood pressure monitoring periods	24, 27, 48, 51 hours
Measurement method	Oscillometric stepwise deflation
Memory capacity	600 measurements
Accuracy	± 3 mm Hg or 2 % of measured value
Applicable cuffs	Small, standard and large sizes
Data transfer to computer	Via optical cable
Batteries (Rechargeable or alkaline)	AA, 2 × 1.5 V
Dimensions	98 × 69 × 29mm
Weight	190g without batteries
Standards	BHS, AAMI



BTL - OB Spiro

SPIROMETRY

BTL-08 SPIRO & BTL CARDIOPOINT-SPIRO FAST OPERATION AND MINIMUM RUNNING COSTS



The BTL-08 Spiro Pro is a modern compact spirometer for performing noninvasive pulmonary function tests and managing patient records comfortably and quickly. Minimal operational costs are ensured by reusable sensor that can be easily disinfected or sterilized. The unit features in-built sensors for automatic BTPS correction of examination results. Results can be viewed on a large colour display and afterwards printed on a thermal paper or office paper.

The BTL CardioPoint-Spiro is identical to Spiro Pro with regard to the measured parameters, but it displays all the data in the BTL CardioPoint software. Once the BTL pneumotachograph is connected and BTL CardioPoint software is installed; any computer can be turned into professional spirometer.

PROFESSIONAL PNEUMOTACHOGRAPH

- ◇ Sterilizable sensors & mouthpieces
- ◇ Built-in sensors for automatic BTPS correction
- ◇ Ergonomically shaped
- ◇ Plastic reusable mouthpieces
- ◇ Can be connected to selected BTL ECG recorders or computer

PORTABLE SPIROMETER

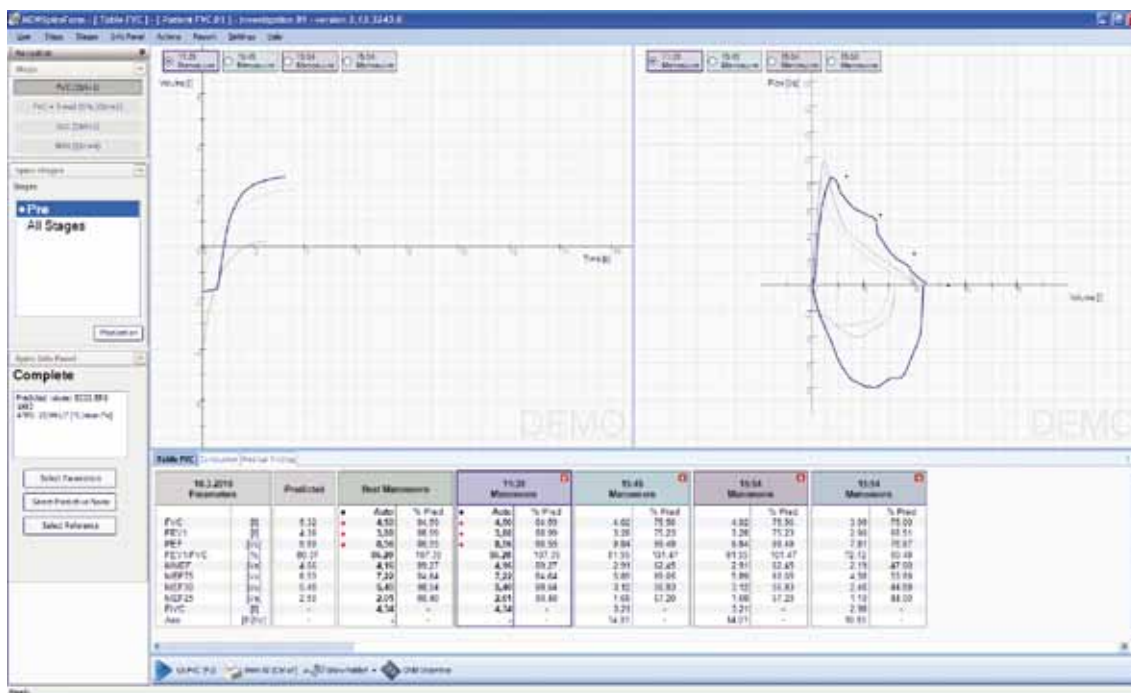
- ◇ Possibility to connect to external printer
- ◇ Large colour touch-screen
- ◇ Portable
- ◇ Built-in accumulator

POWERFUL COMPUTER SOFTWARE

- ◇ Over 50 measured parameters
- ◇ Pediatric encouragement
- ◇ Trends for multiple parameters
- ◇ Easily visible and configurable reports



BTL-08 SPIRO PRO
DESKTOP SPIROMETER



BTL CardioPoint-Spiro
FVC EVALUATION SCREEN

DESKTOP SPIROMETER

The desktop spirometer BTL-08 Spiro Pro guarantees comfortable and professional operation thanks to its large colour touch screen, its possibility to use a thermal or external office printer and finally its powerful diagnostics including its automatic interpretation.

PROFESSIONAL PNEUMOTACHOGRAPH

The plastic sensor and mouthpieces can be disinfected and sterilized. Automatic BTPS correction is performed prior to each examination by the built-in sensors. A common USB interface is used when connecting the pneumotachograph to a computer.

PC SPIROMETRY

The BTL CardioPoint-Spiro uses the same pneumotachograph as the desktop spirometer. Besides online monitoring, examination overview and report creation; the software also allows the use of the spirometry trend. This is a special tool for the comparison of individual examinations. All the other advantages of BTL CardioPoint software such as examination back-up, network operation, etc. are present as well.



BTL CardioPoint-Spiro
PEDIATRIC ENCOURAGEMENT ANIMATIONS

	BTL-08 Spiro Pro (BTL CardioPoint-Spiro)	BTL-08 Spiro
EXTERNAL UNIT		
Display	colour LCD touch screen	colour LCD touch screen
Dimensions of display (mm)	118 × 89	118 × 89
Screen resolution (dots)	640 × 480	640 × 480
Keyboard	combined alphanumeric and functional, touch screen buttons	
Interface	RS232, USB	RS232, USB
Dimensions (mm)	330 × 270 × 74	330 × 270 × 74
Weight Approx. (kg)	3.2	3.2
PRINTER		
Paper width (mm)	112 / A4 trough USB	
Paper type	roll / A4 – office paper	
Printer type	thermal / external laser or ink. printer	
Printer resolution (dpi)	200 / 500 in Y / X axis	
MEASUREMENT PARAMETER		
BTPS correction	automatic	
Inspire / Expire	yes / yes	
Forced spirometry	FVC, Best FVC, FEV0.75, FEV1, Best FEV1, FEV3, FEV6, PEF, FEV0.75/FVC, FEV1/, FVC, FEV3/FVC, FEV6/FVC, FEV0.75/SVC, FEV1/SVC, FEV3/SVC, FEV6/SVC, PIF, FIVC, FIV1, MEF75, MEF50, MEF25, FEF75, FEF50, FEF25, MMEF, FET25, FET50, MIF75, MIF50, MIF25, PEFT, FIF50, FEF50/FIF50, FEF50/SVC, FEV0.75/ FEV6, FEV1/ FEV6, FIV1/FIVC, VEXT, Lung age, BTL CardioPoint-Spiro: Aex, FEV075/VC, FEV1/VC, FEV3/VC, FEV6/VC, FEF25-75, FEF50/VC, VEXT, TO/PEF, T200/PEF, VEXT/FVC	FVC, Best FVC, FEV1, Best FEV1, FEV6 PEF, FEV1/FVC, FEV6/FVC, FIVC, FIV1, PIF, MEF75, MEF50, MEF25, Lung age, BTL CardioPoint-Spiro: Aex, FEV075/VC, FEV1/VC, FEV3/VC, FEV6/VC, FEF25-75, FEF50/VC, VEXT, TO/PEF, T200/PEF, VEXT/FVC
PRE/POST broncho-challenge test	yes	–
Relaxed spirometry	SVC, ERV, IRV, TV, IC, IVC	–
Maximum voluntary ventilation	MVV, MVVf, MRF	–
Predictive values	ECCS/ERS 1993, ECCS 1983, NHANES III, Knudson 1983, Knudson 1976, Roca 1986, CRAPO 1981, ITS, Perreira – Brazil, LAM, Gore – Australia, Zapletal 1977	
Stored records	250	50
User defined profiles	unlimited	–
Interpretation	Enright, ATS, BTS	
Child Incentive	yes	yes
TECHNICAL SPECIFICATIONS		
Flow range (litres/s)	16 l/s (inspire/expire)	
accuracy (50 ml/s to 16 l/s)	± 3 % or 50 ml (whichever is greater)	
Volume ranges (litres)	0.025 to 8 litres	
accuracy (0.025 to 8 l)	± 3 % or 50 ml (whichever is greater)	
Flow resistance	< 79 Pa / l/s	
BTPS CORRECTION		
Temperature sensor	+ 10 °C to + 40 °C	
accuracy	± 2 %	
Relative humidity sensor	0 to 100 % RH	
accuracy	± 4 % for 25 °C, 30–80 % RH	
Mains supply	115 V / 230 V, 50–60 Hz, 40 VA	
Accumulator capacity	3–4 hours	
Charging time	10 hours (if completely discharged)	
ADC resolution	12 bits	
Sampling frequency	1000 Hz	
CLASSIFICATION		
Safety standards	IEC 601-1, IEC 601-1-2, IEC 601-1-4, ISO 14971	
Spirometry standards	EN 13826, ATS / ERS Standards 2005	
Electrical protection class	II according to IEC 536	
Applied part	BF according to IEC 601-1	

