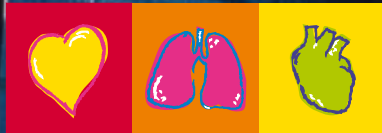


ECG Holter Monitoring System

MT-101 / MT-200 / MT-210



SCHILLER

The Art of Diagnostics

Advanced SCHILLER ECG Holter Monitoring System

Each year, sudden cardiac death claims the lives of millions of people globally. Among the most compelling challenges facing clinicians today is the identification of patients that are at the highest risk for sudden death.

Patients with a cardiac infarction or cardiac arrhythmia are especially vulnerable.

It is vital that risk patients be detected as early as possible so that suitable therapies can be started and measures taken quickly in case of complications. The determination of the ECG Holter values during the day and night phases is essential for a safe diagnosis and therapy control.

SCHILLER offers customised solutions for this, enabling defined solutions for each practice.



SCHILLER high performance Holter System gives you the following benefits:

- One of the smallest and lightest digital Holter recorders on the market today
- Very easy to start a recording
- High recording success because signal quality can be checked before starting a recording
- Voice recording of patient data with the integral microphone
- Simple and clear evaluation of the recording using the Holter System Software MT-200/MT-210
- Small and lightweight Holter recorder MT-101 (9x6x2 cm), 110 g. including battery!)
- 2- or 3-channel ECG by using either a 4- or 6- lead cable
- Recording capacity up to max. 72 hours
- Rechargeable, environmentally-friendly battery (2500 mAh) or single use alkaline battery (AA).
- USB interface



High Performance Software MT-200/MT-210

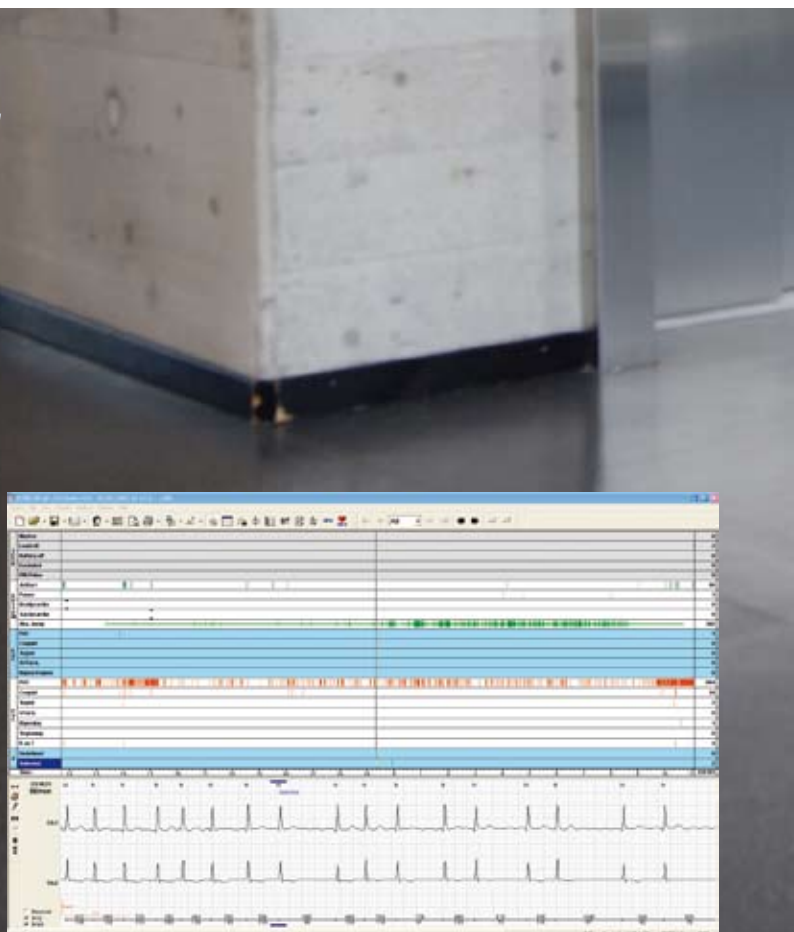
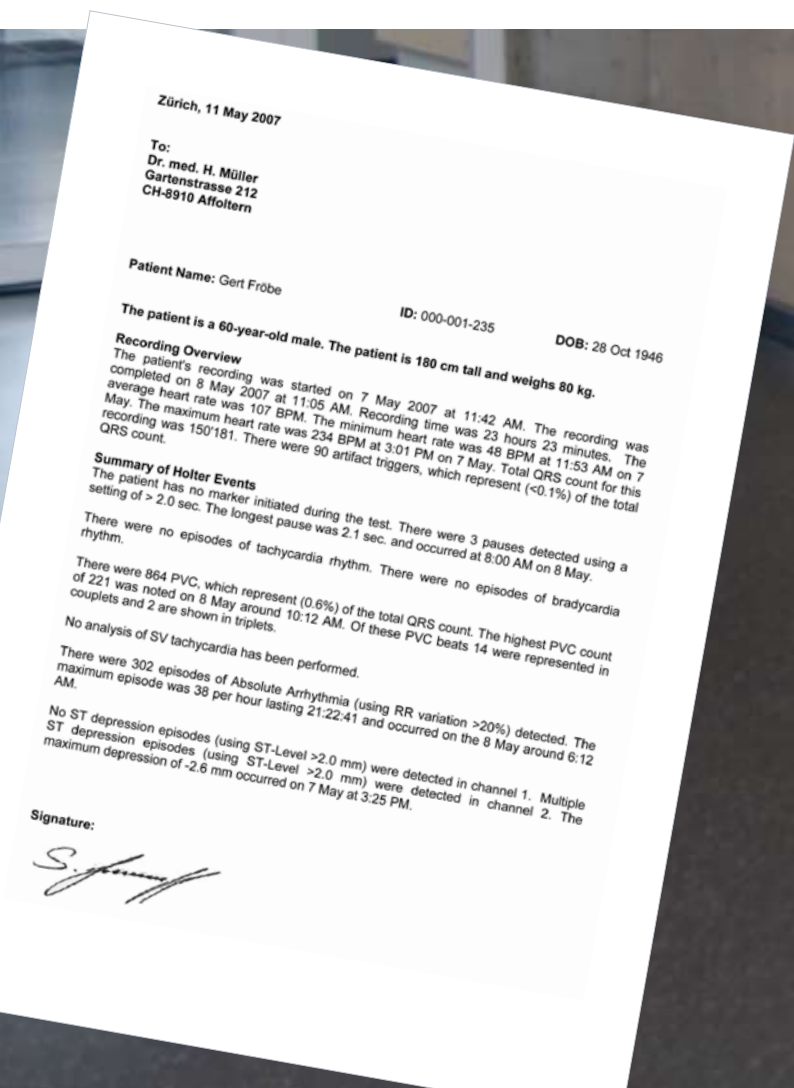
The MT-200/MT-210 software enables you to do time-saving long term ECG analysis. The user-friendly Windows interface and the simple mouse handling make it very easy to operate the application: transfer ECG from MT-101 to MT-200/MT-210, start analysis, and print report - done!

MT-200:

- Selected SCHILLER MONEC beat classification
- ST measurement of elevation and amplitude
- Heart Rate Trend or HRX (Heart Rate Extreme) overview
- Heart Rate Variability analysis of the time domain parameters
- Pacemaker analysis module and templates clustering
- ECG template matching algorithms with "Drag & Drop" function for fast reclassification
- A cover letter module for fast writing and editing of patient letters
- GDT module for fast PDMS integration and data export
- A toolbar module that allows a workflow customisation
- Support for over 20 languages

MT-210:

- Includes all the MT-200 features
- Basis MONEC analysis module and additionally a high performance neuronal network based classifier analysis
- Advanced Heart Rate Variability analysis:
 - Standard time domain parameters
 - Triangular index
 - Lorenz plot analysis and compression of day-/nighttime
 - Frequency domain analysis (FFT) of short and long term parameters
 - Power spectral density calculation for 5 min segments and the complete recording
 - 3D data presentation for a high quality visualisation of the autonomic nervous system



User selected events

Compatible and flexible

Once the recording has been analysed, the data can be saved either in original or in PDF format. This facilitates data export via e-mail (e.g. to the hospital's internal intranet or to external colleagues) and generally enables a more flexible handling with data. In addition, the MT-200 program is compatible with the SCHILLER Data Management System SEMA-200 which offers entirely paper-free archiving of all ECG patient data.

For perfect diagnosis

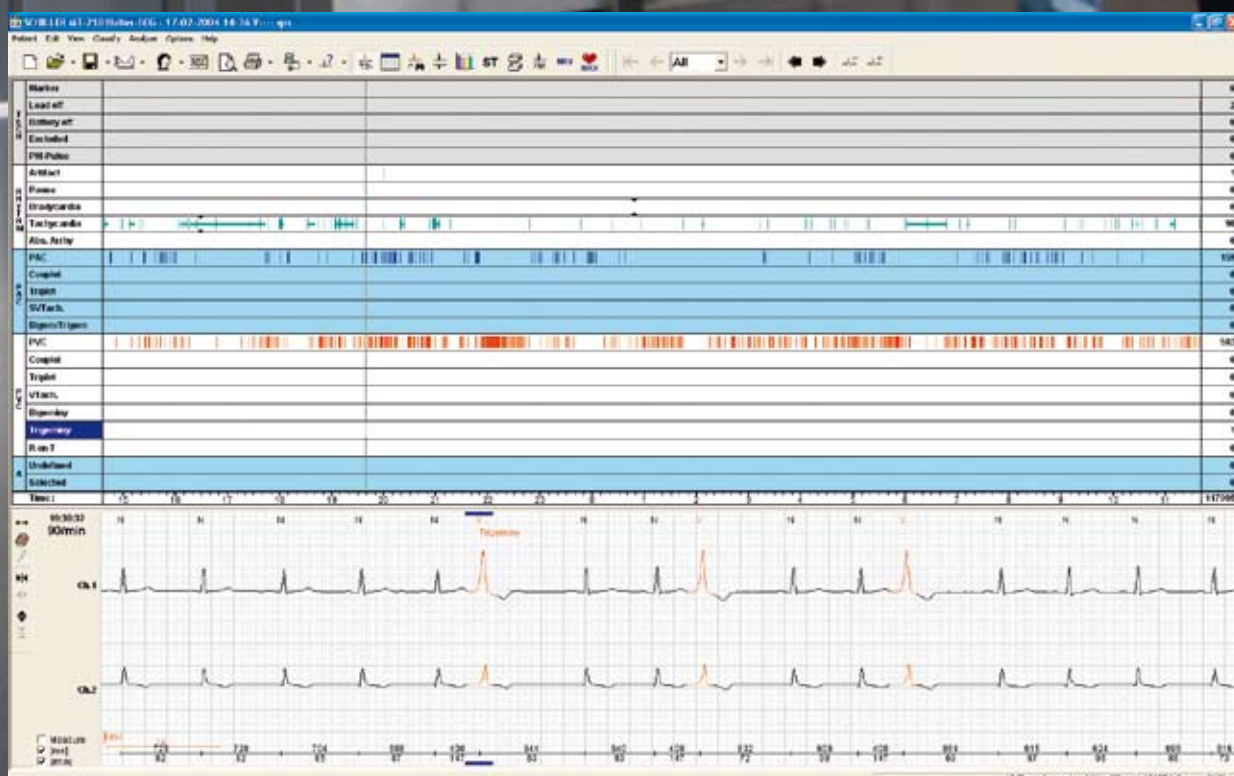
With a wide or high resolution screen, you can have a true to scale display of ECG records for up to 30 minutes. Thanks to the super VGA resolution, you can even diagnose P-waves perfectly on-screen. A graphic display shows all events over the complete recording period on one screen page, where you can modify the amplitude size and speed whenever you like.

The event screen is unique

Throughout the recorded period, the view shows the arrhythmias that have been detected, divided into arterial, ventricular and miscellaneous. This type of display, with grouping and colour-coding, is the "optimal overall assessment tool" for practitioners.

Benefits of the System:

- The system can provide you with a fully automated analysis module
- Template matching algorithm for ECG event separation
- Generation of PDF files for e-mail integration, data storage or presentation and archiving
- Send the results of your investigation direct via an integrated e-mail module
- Perform multiple analysis within only one step
- Connection to the SCHILLER Data Management System SEMA-200
- Define your data export using the GDT interface



Events overview and rhythm

Multiple Template Selection

Template matching

The MT-200/MT-210 program automatically classifies 20 different ventricular and atrial events with a very high level of reliability (Couplet, Triplet, Bigeminus, Trigeminus, Absolute Arrhythmias, Tachycardias etc.). With the MT-200/MT-210 program, QRS complexes with similar forms are automatically grouped into one template.

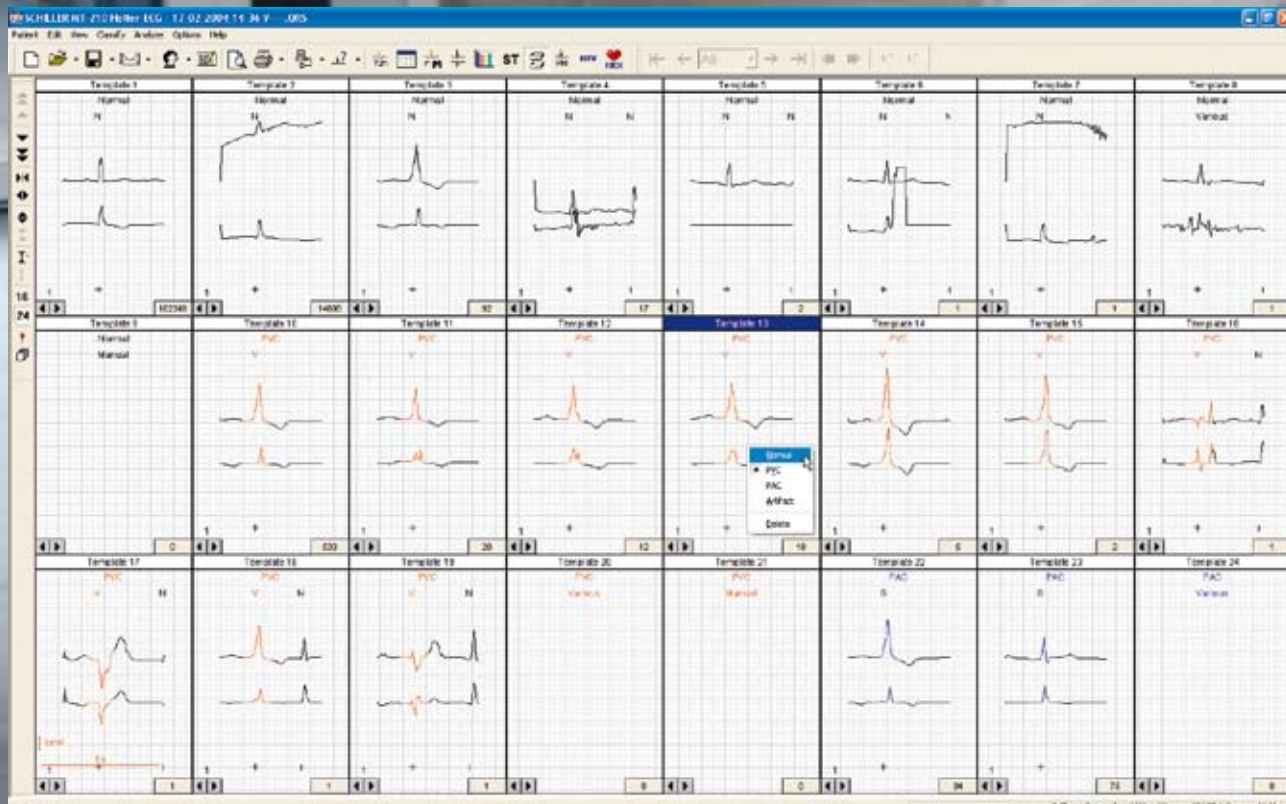
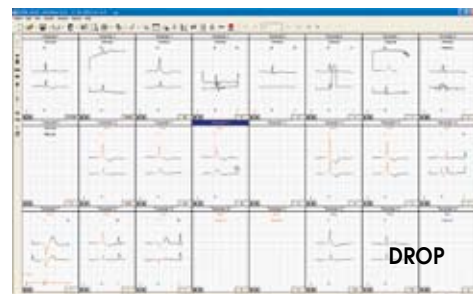
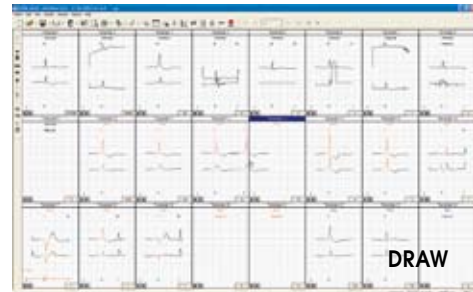
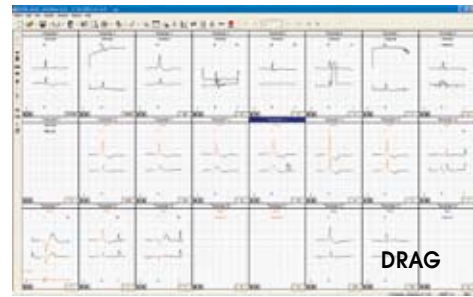
To give you a comprehensive overview of the different types of cardiac excitation spread, the program generates:

- A maximum of 12 "normal" classes
- 1 "artefact" class
- A maximum of 300 different "PVC" classes premature ventricular contractions.
- And a maximum of 12 different supra ventricular extrasystole "SVES" classes

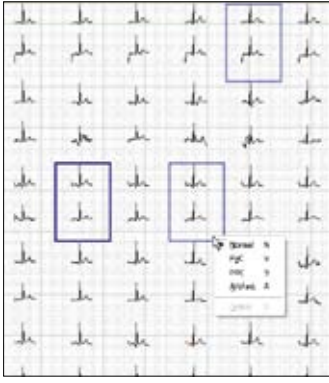
However, you can also carry out your own reclassifications.

Fantastic: Reclassify in just 2 seconds

The "Drag&Drop" function means that you can join an entire class to another: click (DRAG), move the mouse key to the target class you want (DRAW), and release (DROP). In just 2 seconds, the whole class is reclassified and evaluation of the results is automatically adjusted.



24 different template classes, with all complexes in each class, displayed at will. Simply by clicking with the mouse, you can view the individual QRS complexes in this template.



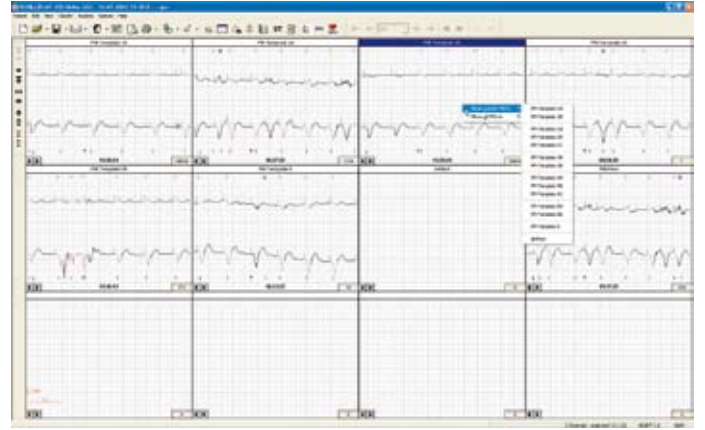
"Individual multi selection" for template reclassification

For "individual multi selection", keep the „CTRL" key pressed and left-click on a template (within a class). By right-clicking on one of the selected templates, a context menu for reclassification is displayed.



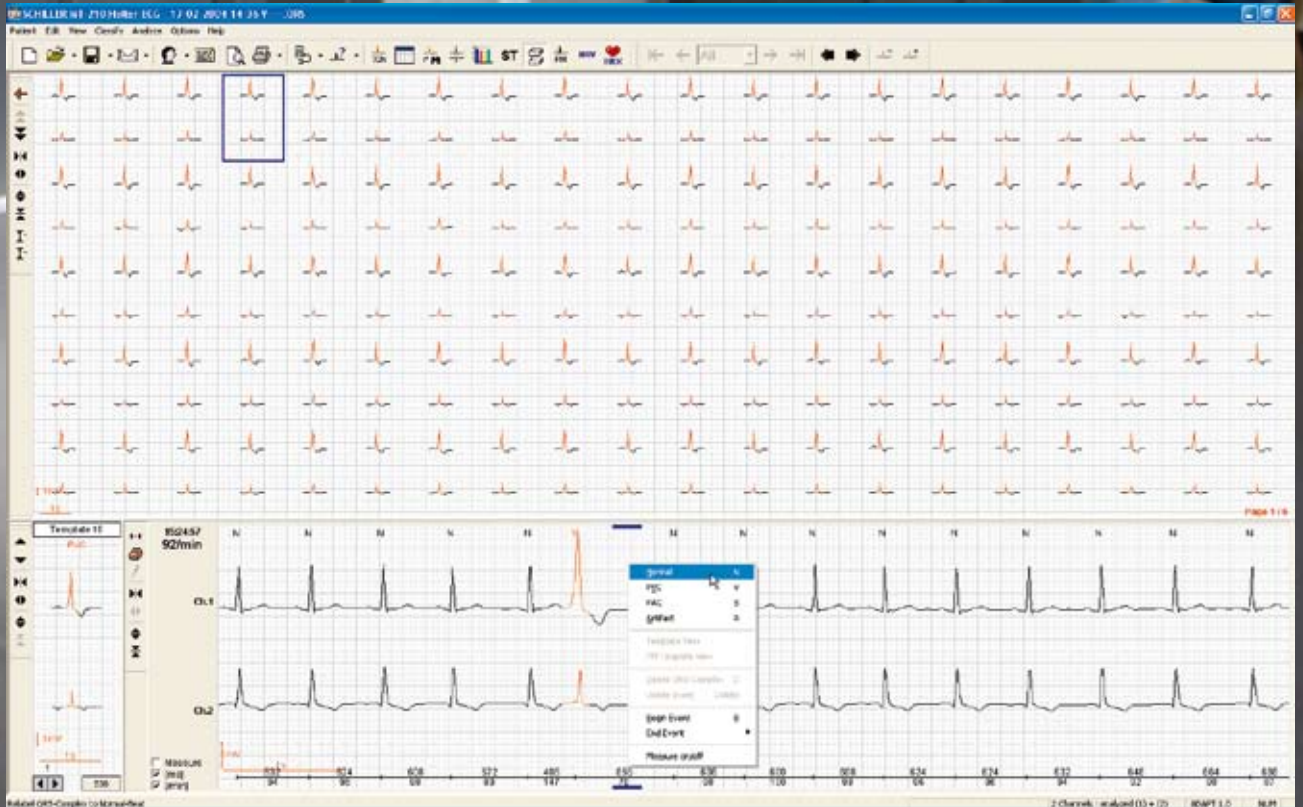
"Multi selection" of templates for reclassification

Keep the "SHIFT" key pressed and left-click on a template to select all templates (within a class) between the first and the last templates. By right-clicking on one of the selected templates, a context menu for the reclassification is displayed.



Display of pacemaker templates

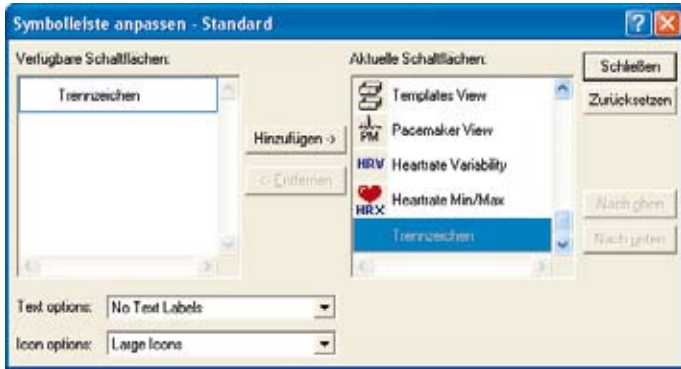
Pacemaker templates show pacemaker pulses occurring in the atrium, the ventricle, and in both. Templates are also given for pacemaker malfunctions such as in the T-wave.



Overview of 100 QRS complexes!

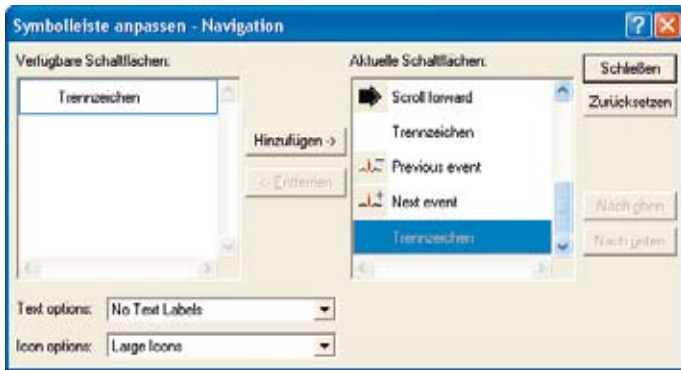
And that's not all – In the bottom left a zoom template beat is displayed. The rhythm strip to the right displays the complexes immediately before and after the reference along with time and heart frequency. Clicking the left/right arrows in the zoom goes to previous/next complex in the template. The number of QRS complexes in the template is also shown.

User Workflow Customisation



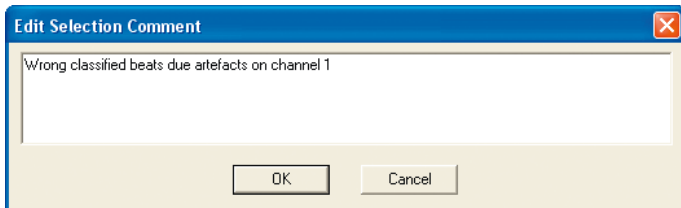
Navigation toolbar

A unique concept for "user workflow" adaptation is presented by a free customizable toolbar menu.



Toolbar Customizer

The settings for the standard and the navigation toolbars can be changed in the "Options > Toolbar" menu. In this way, a workflow can be defined for Holter analysis and unused icons can be removed from the toolbar.



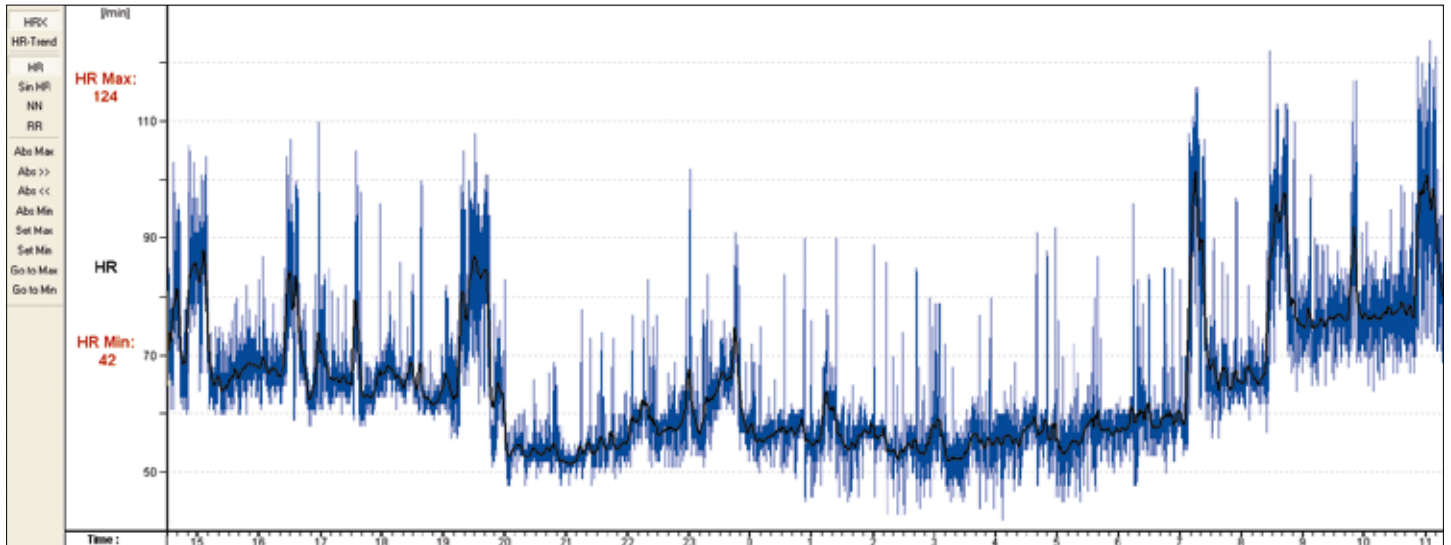
User selected events

The user can delete or edit events at any time. The user's comments can be indicated on the printout.



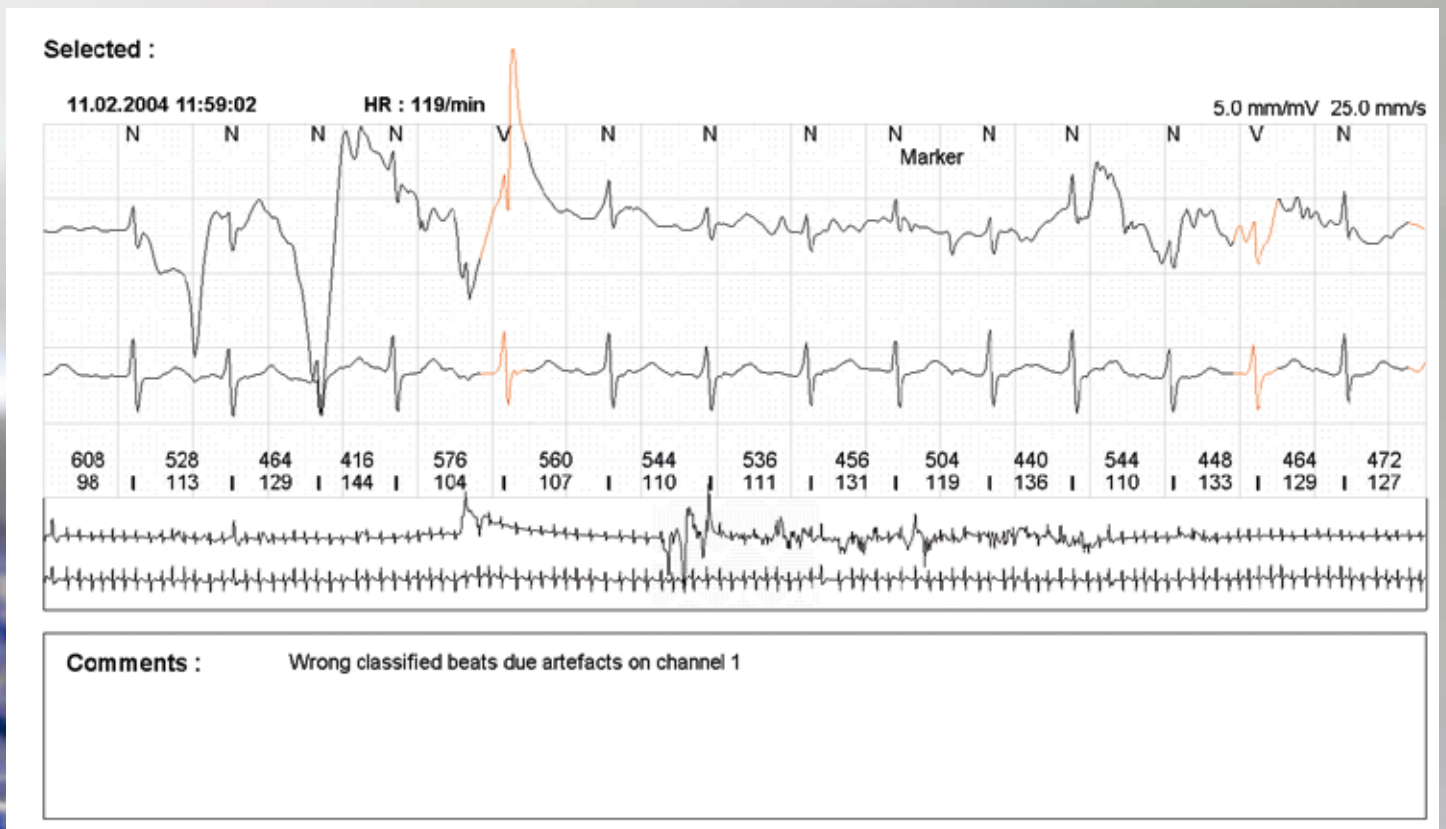
Heart Rate Extreme Values (HRX)

The presentation of Heart Rate Extreme values (HRX) allows you to detect quickly extremes such as pauses or tachycardias. The blue curve shows the progress of the RR intervals. The black curve shows the progress of the "average" heart rate.



Print of events

One page prints the ECG section of two events (with user's comment).



MT-200/210 – the advanced, sophisticated Software

HRV analysis of time domain parameters

Select between different graphical representation screens to see the time domain result of the HRV. You are able to select:

- NN Interval / dNN interval distribution (NN tachogram)
- SDANN and SDNNidx distribution
- Triangular index presentation

Nonlinear methods for HRV

The HRV deduces the time intervals between N-peaks or R-peaks from the measured complexes. From the heart rate data, a standard Lorenz (or Poincaré) plot is constructed by plotting each NN/RR time interval as a function of the one that immediately preceded it, giving a visual representation of the NN/RR data and their shape and classification. The shapes of the attractor regions are also determined quantitatively by approximating them by ellipsoids and calculating their principal axes.

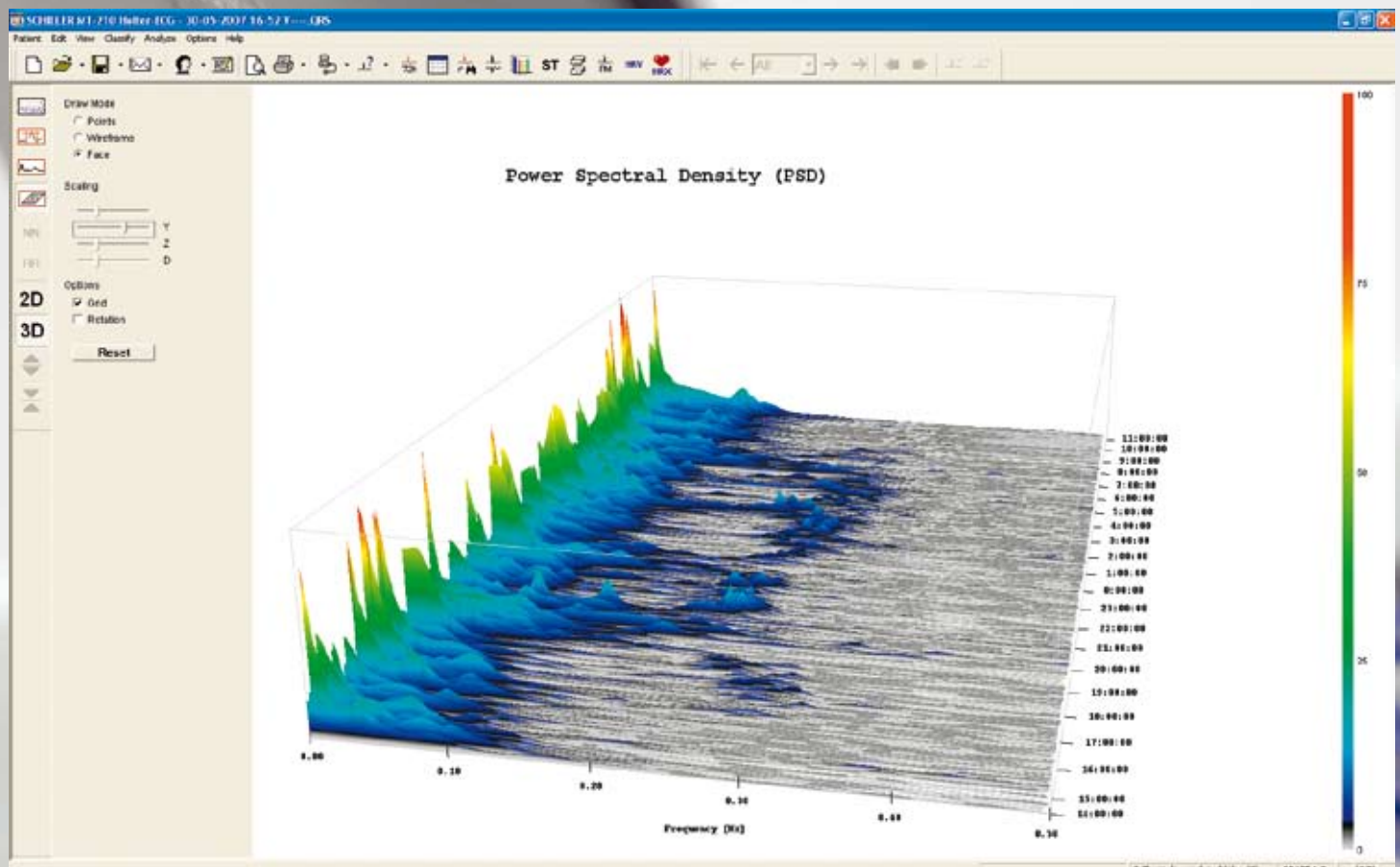
Analysis of Lorenz plot scattering may be clinically useful for studying the effects of drugs and/or ablation on the ventricular response in patients.

A powerful tool is the day / night time screens giving overall variability within the Lorenz plots. A measurement screen provides a graphic display of short-term (SD1) and long-term (SD2) variability.

Frequency domain analysis and 3D presentation

The frequency analysis display shows you very easily the activity of the autonomic nervous system (influence on the heart rate of sympathetic and/or parasympathetic). The MT-210 measures and displays the following frequency bands for you:

- ULF and VLF range from 0.00 cycles per second to 0.04 Hz and change over the recording
- LF has a frequency range from 0.04 Hz to 0.15 Hz
- HF has a frequency range from 0.15 Hz to 0.4 Hz
- VHF is frequency over 0.4 Hz



The 3D view enables you to identify easily sympathetic and/or parasympathetic activity during day-time and/or nighttime.

Cover Letter, PDF and E-Mail

Cover letter editor

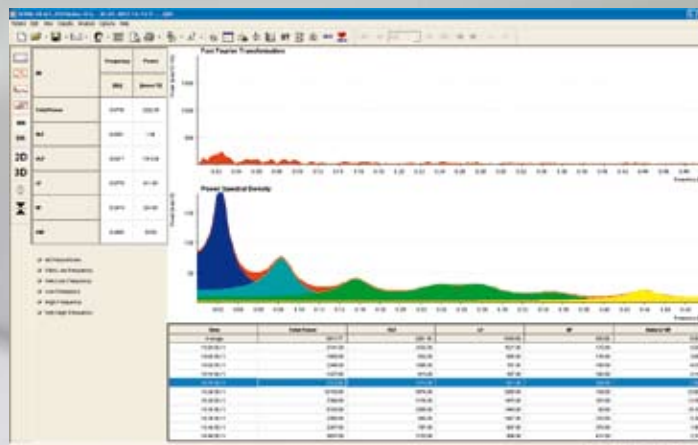
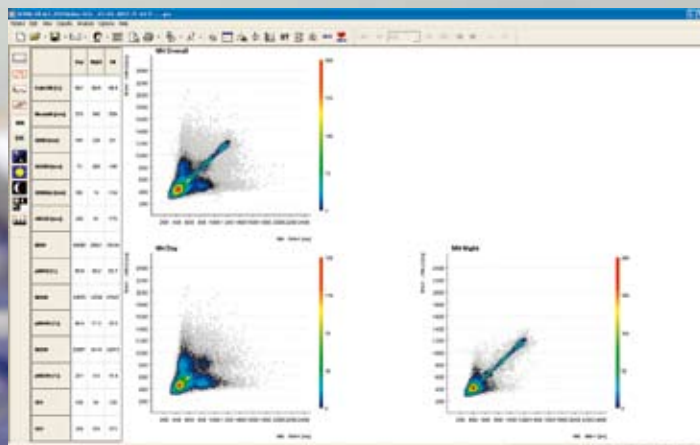
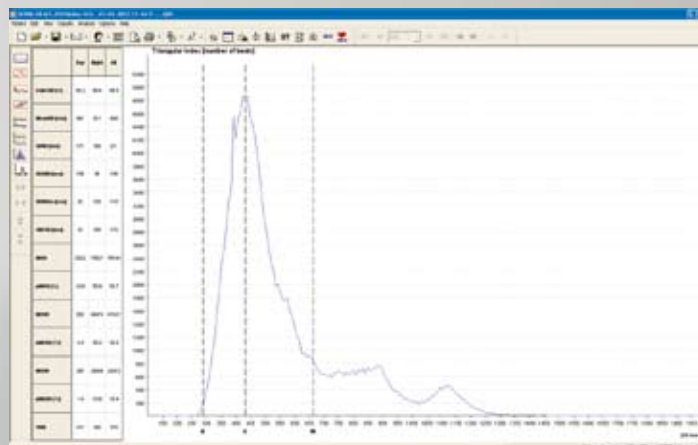
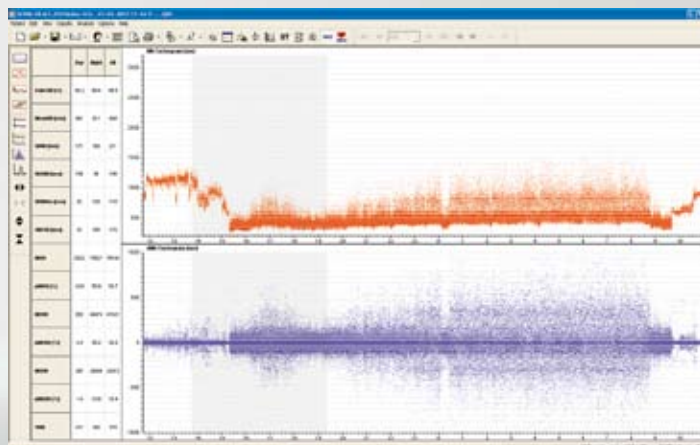
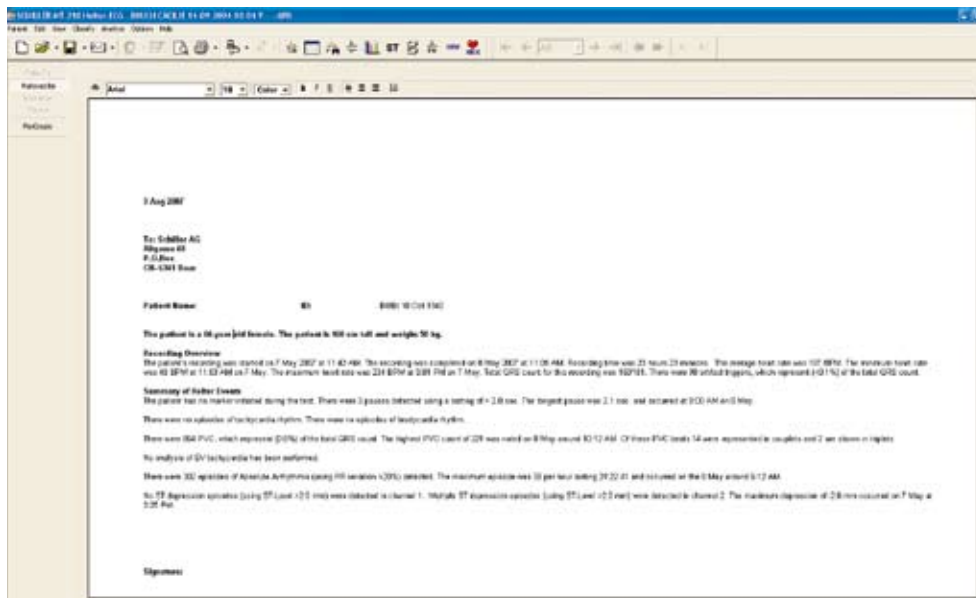
The cover letter editor is a standard, simplified text editor.

Saving a recording in MT-200/MT-210 or PDF format

Recordings can be saved in original MT-200/MT-210 or in PDF format. The advantage of PDF format is that the stored recordings take significantly less space on the hard disk than normally stored recordings.

Sending a recording by e-mail

Recordings (original MT-200/MT-210 or PDF format) can be sent over the internet by e-mail. Click on "Send e-mail" (original MT-200 file) or "Send e-mail as PDF file" in the patient menu. You are then prompted to enter the recipient's address. Click on OK to send.



A table of results on the left side of the view provides you with the necessary information at any time.

Benefits of the SCHILLER ECG Holter Monitoring System

- Backlit graphical LCD with multilingual menu control
- Choose between a 2 and 3 channel ECG with a 4 or 6 lead patient cable
- Sampling rate: adjustable up to 1 kHz (125 Hz/500 Hz/1 kHz)
- High resolution recordings
- Voice recording for patient ID
- Galvanically isolated and defibrillation protected ECG
- USB interface
- Standard rechargeable, environmentally-friendly battery of 2500 mAh capacity (can also use single-use alkaline batteries)
- ECG signals can be displayed on the MT-200/MT-210 software or directly on the MT-101 LCD for checking before starting a Holter recording
- Recording capacity: Up to max. 72 hours
- Data storage on a pre-selected SCHILLER SD card
- Data transmission from the MT-101 to the MT-200/MT-210 analysis system via integrated USB interface or via external SD card reader



Data transmission: alternatively the SD Card can be simply taken out of the MT-101 (the SCHILLER Holter device) and the data can be transmitted with an external card reader or internal card reader of your PC/Laptop.



SCHILLER
The Art of Diagnostics

Headquarters: SCHILLER AG, Altgasse 68, CH-6341 Baar, Switzerland, Phone +41 41 766 42 42, Fax +41 41 761 08 80, sales@schiller.ch, www.schiller.ch

Asia
SCHILLER Asia-Pacific
52200 Kuala Lumpur, Malaysia
Phone +603 6272 3033
sales@schiller.com.my
www.schiller-asia.com

Austria
SCHILLER Handelsgesellschaft mbH
A-4040 Linz
Phone +43 732 70 99-0
sales@schiller.at
www.schiller-austria.com

China
SCHILLER International Trading Co. Ltd.
200335 Shanghai, China
Phone +8621 6209 9627
sales@schiller.com.my
www.schiller.cn

France
SCHILLER Médical S.A.S.
F-67162 Wissembourg/Cedex
Phone +33 3 88 63 36 00
info@schiller.fr
www.schiller-france.com

France (Paris office)
SCHILLER France S.A.S.
F-77608 Bussy-Saint-Georges
Phone +33 1 64 66 50 00
info@schillerfrance.fr
www.schiller-france.com

Germany
SCHILLER Medizintechnik GmbH
D-85521 Ottobrunn
Phone +49 89 62 99 81-0
info@schillermed.de
www.schiller-germany.com

Hungary
SCHILLER Diamed Ltd.
H-1141 Budapest
Phone +36 (1)460 05 92
sales@f-online.hu
www.schiller-hungary.hu

India
SCHILLER Healthcare India Pvt. Ltd.
Mumbai - 400 059, India
Phone +91 222 2826 35 20
sales@schillerindia.com
www.schillerindia.com

Japan
SCHILLER Japan, Ltd.
Hiroshima 734-8551
Phone +81 82 250 2055
koji.maeakawa@schiller.jp
www.schiller.jp

Poland
SCHILLER Poland Sp. z o.o.
PL-02-729 Warszawa
Phone +48 22 843 2089
schiller@schiller.pl
www.schiller.pl

Russia & C.I.S.
SCHILLER AG
125124 Moscow, Russia
Phone +7 (495) 970 11 33
mail@schiller-ag.com
www.schiller-cis.com

Spain
SCHILLER ESPAÑA, S.A.
E-28230-Las Rozas/Madrid
Phone +34 91 713 01 76
schiller@schiller.es
www.schiller-spain.com

Switzerland
SCHILLER-Reomed AG
CH-8953 Dietikon
Phone +41 44 744 30 00
sales@schiller-reomed.ch
www.schiller-reomed.com

Turkey
SCHILLER TÜRKIYE
Okmeydani-Sisli - Istanbul
Phone +90 212 210 8681 (pbx)
info@schiller.com.tr
www.schiller-turkiye.com

USA
SCHILLER America Inc.
Doral, Florida 33122
Phone +1 786 845 0620
sales@schilleramerica.com
www.schilleramerica.com

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